

[www.guemisa.com](http://www.guemisa.com)

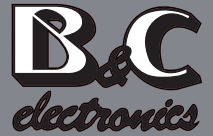


NIF: B-87969416

**SENSORES E INSTRUMENTACION GUEMISA S.L.**

C\ La Fundición 4 Bis - Pl 1ª Oficina-2  
28522 Rivas Vaciamadrid (Madrid)

Telf. 91 764 21 00 email: [ventas@guemisa.com](mailto:ventas@guemisa.com)



## Liquid and gas analysers

**pH**

**O.R.P.**

**Conductivity**

**D. Oxygen**

**Residual Chlorine**

**D. Ozone**

**Turbidity**

**Specific Ions**

**Temperature**

**Combustible and Toxic Gas**

**Electroplating**

**Biotechnology**  
**Chemical Industry**  
**Drinking water**  
**Electroplating**  
**Food Industry**  
**Geology**  
**Laboratory**  
**Pharmaceutical Industry**  
**Printing Industry**  
**Swimming pools**  
**Textile Industry**  
**University and Research**  
**Waste water**  
**Water quality monitoring**  
**O.E.M.**

# Table of contents

<b>Company Profile</b>	<b>pag.</b>	<b>2</b>
<b>Multiparameter probes</b>	<b>pag.</b>	<b>4</b>
Probes with 70 mm diameter	pag.	5
Probes with 42 mm diameter	pag.	6
<b>Electrochemical monitors</b>	<b>pag.</b>	<b>8</b>
7685 Series	pag.	8
7635 Series	pag.	32
7635 Series • <b>New</b>	pag.	32
565 Series	pag.	34
Microtransmitters	pag.	36
7615 Series	pag.	38
3645 Series	pag.	41
3655 Series	pag.	41
3647 Series	pag.	42
3630 Series	pag.	45
<b>Probes - Sensors</b>	<b>pag.</b>	<b>48</b>
pH - ORP - D.Oxygen submersible probes	pag.	48
E. Conductivity probes	pag.	49
Optical D. Oxygen probe • <b>New</b>	pag.	53
Temperature probes	pag.	54
pH electrodes	pag.	55
ORP electrodes	pag.	57
E. Conductivity cells	pag.	58
Dissolved Oxygen cells	pag.	58
Ion Selective Electrodes	pag.	59
<b>Probes &amp; sensors accessories</b>	<b>pag.</b>	<b>60</b>
<b>Portable instruments</b>	<b>pag.</b>	<b>60</b>
Simulators	pag.	63
<b>Gas analyzers</b>	<b>pag.</b>	<b>64</b>
<b>Electroplating</b>	<b>pag.</b>	<b>65</b>
Amperehour counters	pag.	65
Automatic dosers	pag.	66

*The Technical Specifications shown in this catalog may be changed without notice.*

# Company Profile



B&C Electronics was founded in 1972 with the goal of manufacturing reliable equipment for water analysis and for industrial process control.

Since the beginning, the Company had a constant growth in both products manufacturing and customer satisfaction, and it soon became able to fulfil the requests of both a national and international marketplace.

In 1998, the company was certified ISO 9001 by CISQ – IQNET.

Total Quality and the EFQM model of excellence have been the leading elements of the B&C Electronics' Quality System ever since.

Today, the products range is second to none and the Company is among the leading manufacturer of liquid analyzers worldwide.

## **The product mix**

- Multiparameter probes for water monitoring.
- Transmitters and controllers for liquid analysis
- Electrochemical sensors
- Portable instruments
- Electroplating counters/programmers
- Gas analysers
- Automatic dosing systems

## **Worldwide sales and distribution**

During more than 30 years of history, B&C Electronics has built strong partnerships with international distributors and agents.

The Italian Headquarter sells all over the World, but it also relays on the precious help and assistance of its global partners.

Distributors are present on all 5 continents and their major countries.



# Company Profile

## Quality system

B&C Electronics considers Total Quality as a concrete and daily effort toward a “continuous improvement”. For this, our Quality system includes every aspect and every department of the Company:

- R&D constantly develops and updates our products by focusing its attention on quality, reliability, functionality, ease of use and cost
- manufacturing is monitored throughout all steps and is accompanied by documentation for traceability
- tests and calibrations of each product are done with Personal Computers
- a free of charge technical assistance telephone service is available to all Customers
- our staff is regularly trained during periodicals meetings performed in order to maintain the quality of our production process and the sales of our products
- the numerous data collected by our system allow us to monitor the objectives set by all Company's departments, which also include purchasing, shipping and accounting.

## Customer satisfaction

Our goal is to fulfil the implicit demand of each Customer, and this is why we address all of our energy toward Customer Satisfaction.

As a valued ISO 9001:2008 Certified Company, we strive to be competitive and to assure each Customer of our product's reliability.

We believe that Quality is not an option or a luxury, but rather an investment aimed at having more and more satisfied Customers, who know that B&C Electronics guarantees quality and reliability.



## MULTIPARAMETER WATER QUALITY INSTRUMENTS

### • For continuous and unattended monitoring of:

- Well Water
- Underground Aquifers
- Rivers & Lakes
- Estuaries & Oceans
- Wastewater Treatment
- Industrial Effluents

B&C Electronics has developed a waterproof multiparameter data logger that contains all sensors, signal processing circuits and battery power supplies in one compact housing.

The microprocessor controlled unit transmits, through an RS 485 output, data from sensors and messages.

Data can be displayed locally or transmitted to a remote PC, through a modem connection.

Twenty years of expertise in the specialized field of electrochemical measurement has resulted in an integrated sensing probe that is superior to any other for water quality data acquisition.

Of particular importance is the small diameter of the probe, which allows measurement in well casing as small as 2 inches, eliminating the need for expensive new drilling operations.

In addition, a specially designed software makes using the probe extremely simple, even by untrained personnel.

Parameter programming, routine checks, sensors calibration and sensors replacement can be accomplished quickly and easily.

Sensors are available for:

- Depth
- Temperature
- E. Conductivity
- pH
- O.R.P.
- Dissolved Oxygen
- Turbidity
- ISE



### Software of the probe

Data transmission has been made as flexible as possible, allowing the customer to use B&C Electronics connecting software, their own software (written with the help of B&C Electronics support documentation) or standard data analysis software.

The MODBUS communication protocol is available on request.

The software of the probe allows the display and the calibration of the following functions:

- instrument code and SFW identification
- battery charge level
- free and used data storage capacity
- date and time
- measuring parameters
- programmable data storage on Frequency or Depth basis
- switch on/off and stand by

### Connecting software

The SA 8000 software for PC is available for:

- data receiving, storage and printing
- sensors calibration
- calibration parameters statistics
- level or time acquisition
- transfer of data stored in the probe
- data analysis
- graphics
- network management
- sites management

# Multiparameter probes

## Probes with diameter 70 mm



- 8 input channels
- Models with built-in data logger and rechargeable battery
- OEM models for external data loggers
- Submersible to 350 m
- Extractable sensors
- Internal or external power supply

### SA 8060.101

Model with 6 sensors: Depth, Temperature, E.Conductivity, pH, ORP, D. Oxygen.

Max depth 20 m, data logger and internal battery.

### SA 8060.104

Model with 6 sensors: Depth, Temperature, E.Conductivity, pH, ORP, D. Oxygen.

Max depth 350 m, data logger and internal battery.

### SA 8065.101

Model with 6 sensors: Depth, Temperature, E.Conductivity, pH, ORP, D. Oxygen.

Max depth 20 m, without data logger, external power supply.

### SA 8065.104

Model with 6 sensors: Depth, Temperature, E.Conductivity, pH, ORP, D. Oxygen.

Max depth 350 m, without data logger, external power supply.

### 091.181

Option Turbidity.

Scale 0/4000.0 NTU

### 091.161

Option Optical Dissolved Oxygen.

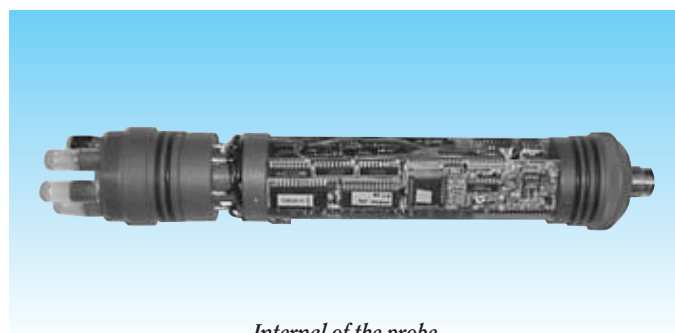
## Specifications

<b>Date</b>	DD-MM-YY (only SA8060.10x)
<b>Hour</b>	hh-mm-ss (only SA8060.10x)
<b>Level</b>	0/20.000 m. - 0/350.00 m. max.
<b>Temperature</b>	-5.00/+55.00 °C
<b>Conductivity</b>	0/6.000 mS autorange 0/60.000 mS
<b>Temperature Coefficient</b>	0/3.50 %/°C
<b>Reference Temperature</b>	10/30 °C
<b>pH</b>	0/14.000 pH
<b>Redox</b>	± 1100.0 mV
<b>Dissolved Oxygen</b>	0/200.00 mmHg 0/200.00 %air 0/20.000 PPM 0/20.000 mg/l
<i>Secondary parameters:</i>	
<b>Pressure</b>	500/800 mmHg
<b>Salinity</b>	0/60.000 PPM
<b>Relative Humidity</b>	0/100 %
<b>Identification of probe</b>	0 / 32
<b>Programmable acquisition (Stand alone)</b>	Time interval Level interval
<b>Power supply</b>	2.7/4.8 Vdc external 12 Vdc 30 mA max
<b>Internal batteries</b>	Ni/Cd rechargeable 1800 mAh
<b>Interface</b>	serial RS485 or RS232 D
<b>Operating Pressure</b>	30 bar max.
<b>Material</b>	PVC/AISI 316
<b>Length</b>	510 mm
<b>Diameter</b>	70 mm max.
<b>Weight</b>	2 Kg max.
<b>Connector</b>	IP 68 - 100 bar oceanographic
<b>Option</b>	MODBUS protocol

*The technical specifications may be changed without notice*

## Non standard models

Ask our sales department



*Internal of the probe*

# Multiparameter probes

## SA 8265.106

With differential pressure sensor and 30 meter cable



The probe SA8265.106 has been designed to analyze the quality of the water by measuring the following parameters:

- **Level**
- **Temperature**
- **E. Conductivity**
- **pH**
- **O.R.P.**
- **Dissolved Oxygen** (optical on request)
- **Turbidity** (option)
- **ISE** (option)

### Specifications

<b>Level</b>	0/20.000 m. (differential pressure)
<b>Temperature</b>	-5.00/+55.00 °C
<b>E. Conductivity</b>	0/6.000 mS autorange 0/60.000 mS
<b>Temperature Coefficient</b>	0/3.50 %/°C
<b>Reference Temperature</b>	10/30 °C
<b>pH</b>	0/14.000 pH
<b>O.R.P.</b>	± 1100.0 mV
<b>Dissolved Oxygen</b>	0/200.00 mmHg, 0/200.00 % air, 0/20.000 PPM, 0/20.000 mg/l
<b>Pressure</b>	500/800 mmHg
<b>Salinity</b>	0/60.000 PPM
<b>Relative Humidity</b>	0/100 %
<b>Interface</b>	serial RS485
<b>Probe ID</b>	0 / 32
<b>Power supply</b>	external 9/14 Vdc, 40/25 mA
<b>Operating Pressure</b>	3 bar max.
<b>Material</b>	PVC/316 s.steel
<b>Length</b>	510 mm max
<b>Diameter</b>	70 mm
<b>Weight</b>	3 kg probe, 2.25 kg cable
<b>Cable</b>	30 m (others available on request)
<b>Option 091.181</b>	0/4000.0 NTU turbidity
<b>Option 091.161</b>	optical DO sensor
<b>Option</b>	ISE (NH4+ , Cl-, others on request)
<b>Option</b>	MODBUS protocol

The technical specifications may be changed without notice

## Probes with diameter 42 mm with gauge Pressure sensor



- **4 input channels**
- **Suitable for 2" piezometers**
- **Submersible to 20 m**
- **Extractable sensors**
- **External power supply**
- **OEM models**

### SA 8345.106

Model with 4 sensors: Depth, Temperature, E. Conductivity, pH.  
The cable is provided with an internal tubing for the Atmospheric Pressure compensation.

### Specifications

<b>Level</b>	0/20.000 m
<b>Temperature</b>	-5.00/+55.00 °C
<b>Conductivity</b>	0/6.000 mS autorange 0/60.000 mS
<b>Temperature Coefficient</b>	0/3.50 %/°C
<b>Reference Temperature</b>	10/30 °C
<b>pH</b>	0/14.000 pH
<b>Identification of probe</b>	0/32
<b>Power supply</b>	9/14 Vdc external 35/20 mA
<b>Interface</b>	serial RS485
<b>Operating Pressure</b>	2 bar max.
<b>Material</b>	PVC/AISI 316
<b>Length</b>	470 mm
<b>Diameter</b>	42 mm max.
<b>Weight</b>	2 Kg max
<b>Cable</b>	5 m in Kevlar

The technical specifications may be changed without notice



# Multiparameter probes

## Accessories

### SA 8000 connecting software

To be installed on the P.C. for the following functions:

- connection to sites and probes in network
- continuous data and messages display
- storage and printing of data
- sensor calibration
- operation mode programming of the probe (time or depth based data logging)
- data transfer from the data logger of the probe
- transfer of the sensors calibration parameter stored in the probe
- graphics and data analysis

A version suitable for GSM communication is available.

### SA 9431 interconnecting cable

Made by 5 m cable and connectors for probe, PC, and battery charger.  
It adapts the RS 485 output from the probe to the RS 232 input of the PC.

### SA 9430 interconnecting cable

Made by 30 m cable and connectors for probe, PC, and battery charger.  
*Kevlar/poliurethane material*  
*Diameter 7.5 mm*

### BC 8582 automatic battery charger

Suitable for 3 NiCd batteries, included into SA 8060.10x models  
*Power 220 Vac ± 10%*  
*Current 0.8 A*

### BC 8601 RS232/RS485 converter

Necessary with cable SA 9431

### SZ 929 extension cable

*Kevlar/poliurethane material*  
*Diameter 7.5 mm*

### SA 9409 blind plug

Suitable for stand alone and vertical profile operating mode

## Spares

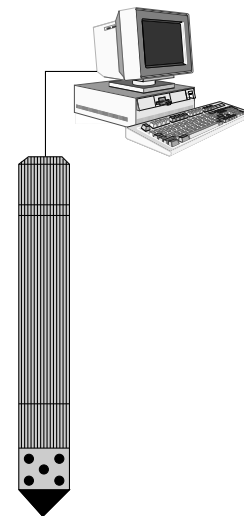
- SA 9100** Reference electrode
- SA 9110** pH electrode
- SA 9115** pH + ORP electrode
- SA 9120** ORP electrode
- SA 9130** Conductivity sensor
- SA 9150** Temperature sensor
- SA 9160** D. Oxygen sensor
- SA 9180** Turbidity sensor

## Service

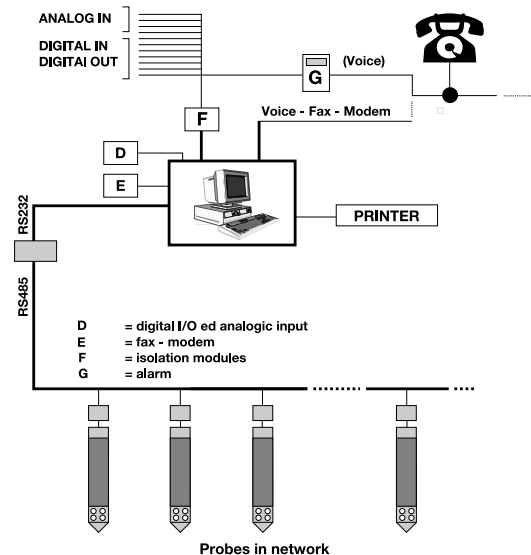
B&C Electronics provides periodical revision and calibration to Multiparameter probes under Customers request.

## Applications

### Real time mobile monitoring

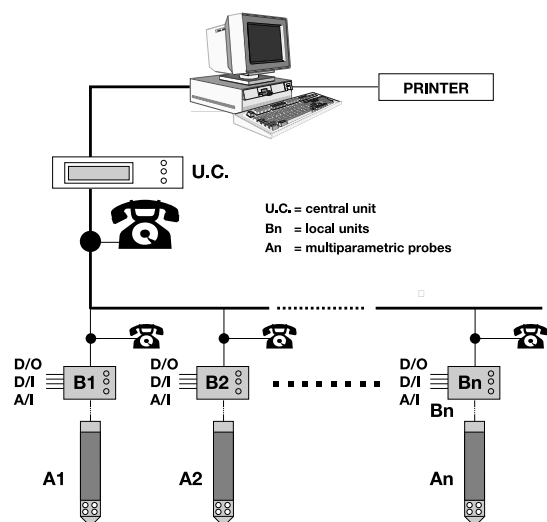


### Local monitoring



Probes in network

### Remote monitoring



# Electrochemical Monitors

## 7685 SERIES microprocessor-based



### Common features

- Selectable input
- Input from RTD Pt100 3 wires
- Temperature readout
- Dual filter software
- Operating mode: automatic and manual
- Calibration parameters display
- Set-point and alarm conditions display
- Automatic or manual temperature compensation
- 0/20 mA or 4/20 mA programmable isolated output
  
- Dual set-point with hysteresis, delay and min/max programmable functions
- Min/max and set-points timing alarm relay
  
- Software:
  - 3 access levels
  - user friendly
  - keyboard lock
  - watch-dog
  
- EEPROM parameters storage
- Automatic overload protection and reset
- Extractable terminal blocks
- 96X96 (1/4" DIN) housing

### Fieldbus Communication

The system is based on a digital communication through an open Modbus protocol, which interacts with the following Fieldbus: Profibus DP, Profinet/Modbus-TCP, DeviceNet, CANopen, EtherNet /IP/Modbus-TCP

Customers can view the main data and functions, such us:

- Primary and secondary measuring values
- Error messages
- Set-points relay, alarm relay and autoclean relay status

The "Virtual Instrument" is an innovative solution through which Customers can perform, from a remote station, all specific operations.

Custom versions with bidirectional communication of data are available for O.E.M. and system integrators.

### Common specifications

#### Temperature

Input: RTD Pt100 2/3 wires

#### Set point A and B:

Operation: ON/OFF

Hysteresis: adjustable

Delay: 0.0/99.9 s

\* Function: Max/Min

Relay contacts: SPDT 220 V 5 A (resistive load)

#### Alarm:

Low/High: adjustable

Delay: 0.0/99.9 s

\* Relay status: activated/deactivated

\* Alarm on max. operating time of set-point A/B: ON/OFF

\* Max operating time of set-point A/B: 0/60 minutes

Relay contacts: SPDT 220 V 5 A (resistive load)

#### Analog output N° 1

\* Input corresponding to the analog output (option 091.371x): selectable

\* Output range: 0-20/4-20 mA (it can be made to represent any segment of the measuring scale)

Response time: 2.5 s for 98%

Isolation: 250 Vac

Load: 600 ohm max

#### Analog output N° 2 (option 091.371x)

\* Input corresponding to the analog output: selectable

\* Output range: 0-20/4-20 mA (it can be made to represent any segment of the measuring scale)

Response time: 2.5 s for 98%

Isolation: 250 Vac

Load: 600 ohm max

#### Configuration (\*)

The above parameters indicated by asterisks "\*", may be selected in the Configuration menu

#### General Specification

Alphanumeric display: 1 line x 16 characters

Operating temperature: 0/50 °C

Humidity: 95% without condensation

Power supply: 110/220 Vac ± 10% 50/60 Hz

Isolation: 4 kV between primary and secondary (IEC 348)

Power: 5 VA max.

Terminal block: extractable

Weight: 850 g

Dimensions: 96 x 96 x 155 mm

#### Options

**091.701** RS 232 isolated output

The output sends the data to the serial port of the computer.

**091.404** 24 Vac power supply

**091.414X** 9/36 VDC power supply

*The technical specifications could be changed without notice.*

## PH 7685 pH/ORP controller



Add the following to the common Features/Specifications of the 7685 Series shown overleaf

- **Applications:**
  - water treatment
  - food industry
  - drinking water
  - swimming pool
  - biotechnology
- **Input from:**
  - pH electrode (Glass or Antimony)
  - ORP electrode
  - Pt100 3 wires
- **Temperature readout**
- **Calibration parameters display**
- **Set-point and alarm conditions display**
- **Automatic or manual temperature compensation**
- **Operating mode: automatic and manual**
- **0/20 mA or 4/20 mA programmable isolated output**
- **Dual set-points with hysteresis, delay and min/max programmable functions**
- **Min/max and set-points timing alarm relay**
- **Continuous/flashing alarm**
- **EEPROM parameters storage**
- **Automatic overload protection and reset**
- **Extractable terminal blocks**
- **96X96 (1/4" DIN) housing**

## Specifications

### Sensors type

Glass pH - Antimony pH - ORP - 080102.1 preamplifier  
RTD Pt 100 3 wires

### Glass electrode

Zero: 0.0 mV at pH 7  $\pm 2$  pH  
Slope: 59.16 mV/pH at 25 °C 80/110 %

### Antimony electrode

Zero: -325 mV at pH 7  $\pm 2$  pH  
Slope: 50 mV/pH at 25 °C 70/140 %

### ORP electrode

Zero adjustment:  $\pm 100$  mV  
Sens. adjustment: 80/110 %

### Input scales

\* pH: 0.00/14.00  $\pm 0.01$  pH  
\* ORP: -1000/+1000 mV  $\pm 1$  mV  
\* Software filter 90%RT: 0.4/20.0 s for small/large variations

### Temperature

Measuring and compensation range: -10/+110 °C  
Resolution:  $\pm 0.1$  °C  
Zero adjustment:  $\pm 2$  °C  
Manual Temp. comp: -10.0/110.0 °C

### Option 091.211

Set-point A/B selectable actions: ON/OFF - PFM - PWM

### PFM action

Proportional band: 0.00/1.50 pH (0/150 mV)  
Pulse frequency: 0/120 pulse/min  
Function: Min/Max

### PWM action

Proportional band: 0.00/1.50 pH (0/150 mV)  
Pulse Period: 0/99.9 s  
Function: Min/Max

### Option 091.3711

Dual isolated output.  
The user may select the temperature output

### Option 091.4143

9/36 VDC power supply

*The technical specifications could be changed without notice.*

## Accessories

This instrument may use all pH and ORP sensors and amplified probes from B&C Electronics catalogue.

# Electrochemical Monitors

## PH 7685.010 pH+ORP controller



Add the following to the common Features/Specifications of the 7685 Series shown overleaf

- **Applications:**
  - pH + ORP measuring
  - chromate and cyanide treatment plants
  - swimming pool
  - autoclean sensors
  - PFM / PWM regulations
- **Dual input from:**
  - pH electrode (Glass or Antimony)
  - ORP electrode
- **Input from Pt100 3 wires**
- **pH/mV/Temperature readout**
- **Dual filter software**
- **Operating mode: automatic and manual**
- **Calibration parameters display**
- **Set-point and alarm conditions display**
- **Automatic or manual temperature compensation**
- **Dual isolated output:**
  - 0/20 mA or 4/20 mA selectable
  - pH/ORP/°C selectable
- **Dual set-points (pH/ORP selectable) with selectable action:**
  - ON/OFF
  - PFM proportional Pulse Frequency Modulation
  - PWM proportional Pulse Width Modulation with hysteresis, delay and min/max programmable functions
- **Continuous/flashing alarm**
- **Min/max and set-points timing alarm relay**
- **Autoclean relay**
- **EEPROM parameters storage**
- **Automatic overload protection and reset**
- **Extractable terminal blocks**
- **96X96 (1/4" DIN) housing**

## Specifications

### Sensor type

Glass pH/Antimony pH/ ORP

### Glass electrode

Zero: 0.0 mV at pH 7 ±2 pH

Slope: 59.16 mV/pH 25 °C 80/110 %

### Antimony electrode

Zero: -325 mV at pH 7 ±2 pH

Slope: 50 mV/pH 25 °C 70/140 %

### ORP electrode

Zero adjustment: ±1000 mV

Sens. adjustment: 80/110 %

### Input scales

\* pH: 0.00/14.00 ±0.01 pH

\* ORP: -1000/+1000 mV ±1 mV

\* Software filter 90%RT: 0.4/20.0 s for small/large variations

### Temperature

Input: RTD Pt100 2/3 wires connection

Measuring and compensation range: -10/+110 °C

Zero adjustment: ±2 °C

### Set point A and B

\* ON/OFF action 0.00/14.00 pH -1000/1000 mV

Hysteresis: 0.00/1.50 pH 0/150 mV

Delay: 0.0/99.9 s

\* Function: Min/Max

### PFM action

Proportional band: 0.00/1.50 pH 0/150 mV

Pulse frequency: 0/120 pulse/min

\* Function: Min/Max

### PWM action

Proportional band: 0.00/1.50 pH 0/150 mV

Pulse Period: 0/99.9 sec

\* Function: Min/Max

### Relay contacts

SPDT 220 V 5 A (Resistive load)

### Analog output N° 1 and N° 2

\* Input corresponding to the analog output : pH/mV/°C

\* Output range: 0-20/4-20 mA (it can be made to represent any segment of the measuring scale)

### Options

#### 091.701

RS 232 isolated output.

The output sends the data (pH, mV, °C) to the serial port of the computer.

#### 091.404

24 Vac power supply

#### 091.4143

9/36 VDC power supply

*The technical specifications could be changed without notice*

## Accessories

This instrument may use all pH and ORP sensors from B&C Electronics catalogue.

# Electrochemical Monitors

## C 7685

E.Conductivity controller



Add the following to the common Features/Specifications of the 7685 Series shown overleaf

- **Applications:**
  - deionized water
  - drinking water
  - food industry
  - surface treatment
- **Selectable input from:**
  - 2 electrodes
  - 4 electrodes pre-amplified cell
  - electrodeless pre-amplified cell
- **Scales: from 0.2 mS to 40 Siemens**
- **Autoranging**
- **Conversion in % - gr/l - Bè**
- **Temperature readout**
- **Dual filter software**
- **Calibration parameters display**
- **Dual set-point and alarm conditions display**
- **Automatic or manual temperature compensation**
- **Automatic or manual acquisition of the temperature compensation table**
- **Isolated output:**
  - 0/20 mA or 4/20 mA selectable
  - programmable input on the span
- **Automatic or manual operation**
- **Dual Set-point with hysteresis, delay, and min/max programmable functions**
- **Alarm:**
  - continuous/flashing
  - min/max and delay programmable
  - on Set-points timing
- **Automatic overload protection and reset**
- **Extractable terminal block**
- **96x96 (1/4 DIN) housing**

## Accessories

This instrument may use all the probes and sensors of the present catalog

## Specifications

### Input

- \* From 2-electrode E.C. cell
- \* From 080310 4-electrode microtransmitter
- \* From 080315 electrodeless microtransmitter
- From RTD Pt100 3 wires

### Scales

- \* See tables Scales vs. K
- \* Autoranging: on/off
- \* Indirect scale: on/off
- Zero adjustment: 0/5 %
- Sens. adjustment: 60/160 %
- \* Temp. reference: 10/99 °C
- \* Table /coeff. ATC selection
- \* ATC coefficient: 0/5 %/°C
- \* Software filter 90%RT: 0.4/20.0 s for small/large variations
- Display resolution: 1/1000 at 20 °C

### Temperature

- Input: RTD Pt100 2/3 wires connection
- Measuring and compensation range: -10.0/+110.0 °C
- Resolution: +/- 0.1 °C
- Zero adjustment: +/- 1 °C
- Manual Temp. comp: -10.0/+110.0 °C

### Options

- 091.3713** dual analog programmable and isolated output.  
The operator may select an output for Temperature.
- 091.701** RS232 isolated output.  
The output sends the data (E.C., °C) to the serial port of the computer.
- 091.404** 24 Vac power supply
- 091.4143** 9/36 VDC power supply

An option dual line display for E.C. and temperature readout is available on request.

*The technical specifications may be changed without notice*

### Input from 2-electrode cells

K cm <sup>-1</sup>	0,1	0,2	0,5	1,0	2,0	5,0	10,0
Range	0,2000µS	0,4000µS	1,000µS	2,000µS	4,000µS	10,00µS	20,00µS
	2,000µS	4,000µS	10,00µS	20,00µS	40,00µS	100,0µS	200,0µS
	20,00µS	40,00µS	100,0µS	200,0µS	400,0µS	1000µS	2000µS
	200,0µS	400,0µS	1000µS	2000µS	4000µS	10,00mS	20,00mS
	2000µS	4000µS	10,00mS	20,00mS	40,00mS	100,0mS	200,0mS

### Input from microtransmitters 080310 connected to 4-electrode cells or Input from microtransmitters 080315 connected to electrodeless cells

K cm <sup>-1</sup>	0,1	0,2	0,5	1,0	2,0	5,0	10,0
Range	0,2000mS	0,4000mS	1,000mS	2,000mS	4,000mS	10,00mS	20,00mS
	2,000mS	4,000mS	10,00mS	20,00mS	40,00mS	100,0mS	200,0mS
	20,00mS	40,00mS	100,0mS	200,0mS	400,0mS	1000mS	2000mS
	200,0mS	400,0mS	1000mS	2000mS	4000mS	10,00 S	20,00 S
	2000mS	4000mS	10,00 S	20,00 S	40,00 S	100,0 S	200,0 S

# Electrochemical Monitors

## C 7685.001

E.Conductivity - Resistivity controller



Add the following to the common Features/Specifications of the 7685 Series shown overleaf

- **Applications:**
  - high purity water
  - micro electronics industry
  - electroplating
  - pharmaceutical industry
- Scales in  $\mu\text{S}$ ,  $\text{mS}$  and Mohm
- Autoranging
- Temperature readout
- Dual filter software
- Calibration parameters display
- Dual set-point and alarm conditions display
- Automatic or manual temperature compensation
- Table of high purity water stored into the microcomputer
- Isolated output:
  - 0/20 mA or 4/20 mA selectable
  - programmable input on the span
- Automatic or manual operation
- Dual Set-point with hysteresis, delay, and min/max programmable functions
- Alarm:
  - continuous/flashing
  - min/max and delay programmable
  - on Set-points timing
- EEPROM parameters storage
- Automatic overload protection and reset
- Extractable terminal block
- 96x96 (1/4 DIN) housing

## Specifications

### Operating mode

Automatic/Manual

### E.C. Cells

- \*  $K = 0.01/0.10/1.0/10 \text{ cm}^{-1}$
- \* Input scales: 200.0 nS/20.00 mS (see table)  
readout in Mohm
- \* Autoranging: ON/OFF  
Zero adjustment: +/- 10 %  
Sens. adjustment: 60/160 %
- \* Temp. reference: 10/25 °C
- \* ATC coefficient: 0/3.50 %/°C
- \* Software filter 90%RT: 0.4/20.0 s for small/large variations
- Display resolution: 1/1000 at 20 °C

### Temperature

Input: RTD Pt100 2/3 wires connection  
Measuring and compensation range: 0/+100 °C  
Resolution: +/- 0.1 °C  
Zero adjustment: +/- 2 °C  
Manual Temp. comp: 0/100 °C

### Options

- 091.3711** dual analog programmable and isolated output.  
The operator may select an output for temperature.
- 091.701** RS232 isolated output.  
The output sends the data (E.C., °C) to the serial port of the computer.
- 091.404** 24 Vac power supply
- 091.4143** 9/36 VDC power supply

An option dual line display for E.C. and temperature readout is available on request.

*The technical specifications may be changed without notice*

### Input from 2-electrode cells

K $\text{cm}^{-1}$	0,01	0,10	1,00	10,0
Range		200nS	2000nS	20,00 $\mu\text{S}$
	200,0nS	2000nS	20,00 $\mu\text{S}$	200,0 $\mu\text{S}$
	2000ns	20,00 $\mu\text{S}$	200,0 $\mu\text{S}$	2000 $\mu\text{S}$
	20,00 $\mu\text{S}$	200,0 $\mu\text{S}$	2000 $\mu\text{S}$	20,00mS

## Accessories

See SI 308T, SZ 3320.1, SZ 3330.1 probes

## OD 7685

### Dissolved Oxygen controller



Add the following to the common Features/Specifications of the 7685 Series shown overleaf

- **Applications:**
  - water treatment
  - drinking water
  - fish pond
  - food industry
  - biotechnology
- **Selectable input from:**
  - polarographic high/low current cells
  - galvanic cells
  - 080610.2 preamplifier
- **Scales: PPM - mg/l - % air sat. - mmHg**
- **Autoranging**
- **Temperature readout**
- **Dual filter software**
- **Calibration parameters display**
- **Dual set-point and alarm conditions display**
- **Autocalibration in air**
- **Automatic or manual temperature compensation**
- **Pressure, R.H., salinity compensation**
- **Isolated output:**
  - 0/20 mA or 4/20 mA selectable
  - programmable input on the span
- **Automatic or manual operation**
- **Dual set-point with hysteresis, delay, and min/max programmable functions**
- **Alarm:**
  - continuous/flashing
  - min/max and delay programmable
  - on set-points timing
- **Autoclean relay and holding function for input and outputs**

## Specifications

### Polarographic Cell

Low Current cell: 25/75 nA

High Current cell: 140/510 nA

\* Polarization: 0/1250 mV

### Galvanic Cell

Input: 17/51 mV

### Selectable scales

0/200.0 mmHg D.O. partial pressure

0/200.0 % air saturation

0/20.00 PPM

0/20.00 mg/l

\* Software filter 90%RT: 0.4/20.0 s for small/large variations

Zero adjustment: +/- 10%

Sensitivity adjustment: 80/170 %

Display resolution at 20°C: 1/1000

### Secondary parameters

Pressure: 500/800 mmHg

Salinity: 0/60,000 PPM

Relative Humidity: 0/100 %

### Temperature

Input: RTD Pt100 2/3 wires connection

Measuring and compensation range: -2/+52 °C

Resolution: ±0.1 °C

Zero adjustment: ±2 °C

Manual temp. comp.: 0/50 °C

### Options

**091.3713** dual analog programmable and isolated output.

The operator may select an output for temperature.

**091.701** RS232 isolated output.

**091.404** 24 Vac power supply

**091.4143** 9/36 VDC power supply

*The technical specifications may be changed without notice*

- **EEPROM parameters storage**
- **Automatic overload protection and reset**
- **Extractable terminal block**
- **96x96 (1/4 DIN) housing**

## Accessories

This instrument may use all the D.Oxygen probes and sensors of the present catalog

# Electrochemical Monitors

## Dissolved Oxygen Autoclean system

**Install & forget**



- **Applications:**
  - water treatment
  - activated sludge
  - de-nitrification
  - fish pond

The on-line monitoring system is designed for the continuous measurement of oxygen gas in solution.

The full scale operating range of the system may be selected by the user for 0-20.00 PPM or 0-40.00 PPM, and the sensing system will operate on water streams with temperature from 0 to 50 °C.

The measured dissolved oxygen concentration is displayed on a backlit liquid crystal display on the front of the instrument. The D.O. monitor is well suited for wastewater treatment aeration tanks, effluent monitoring, or stream monitoring.

The basic sensing element used in the D.O. monitor is a sensor assembly that automatically delivers high pressure air to the tip of the sensor to effectively blast accumulated growth from the membrane.

The system is available with galvanic or optical sensor.

In particular, B&C Electronics offers 3 different systems:

- **DO meter in water-proof enclosure with autoclean system**
- **Galvanic sensor with autoclean**
  
- **DO meter in water-proof enclosure with autoclean system**
- **Optical sensor with autoclean**
  
- **2-wire 4/20 mA transmitter. SEE PAGE 53**

For special applications, the D.O. monitor can be supplied without the cleaner, and the customer will provide the pressure air to the sensor.

Submersible sensors are designed for direct immersion in an aeration tank or flowing stream.

A 15 m cable is potted into the top section of the sensor assembly, and connects directly to the D.O. monitor.

A separate tubing connection located at the top of the sensor assembly is provided for connection of a 15 m length of plastic tubing between the sensor and the monitor.

The D.O. sensor assembling is mounted to a 1" pipe using a special mounting adapter.

The 1" pipe is attached to the tank handrail with a bracket assembly that holds the sensor at a slight angle in the tank.

Once installed and placed into operation, the Autoclean D.O. sensor will provide months of reliable D.O. measurement in almost any application. Sensor should be checked for build-up after the first 3 months to verify that the cleaner is keeping the membrane clean.

However, sensor maintenance intervals of 6 months or more are likely in most aeration tanks.

The sensor cleaning frequency is user programmable, and units are shipped with a default cleaning frequency of once every 24 hours.

This frequency has proven sufficient for most aeration applications, but can be increased if needed for a specific application.

A cleaning frequency of more than every 2 hours is not recommended.



## System installation

The installation of the auto-clean D.oxygen system is quick and simple. A special mounting adapter connects the sensor to standard 1" conduit or pipe, and another adapter provides secure connection of the pipe to a standard handrail system.



## OD 7685.110

Optical Dissolved Oxygen controller - autoclean



Add the following to the common Features/Specifications of the 7685 Series shown overleaf

- **Applications:**
  - water treatment
  - activated sludge
  - de-nitrification
  - fish pond
- **Input from optical D.O. sensor**
- **Scales: PPM - mg/l - % air sat. - mmHg**
- **Autoranging**
- **Microprocessor-based instrument**
- **Temperature readout in °C or °F**
- **Dual filter software**
- **Accuracy: +/- 0.2%**
- **Calibration parameters display**
- **Dual set-point and alarm conditions display**
- **Autocalibration in air**
- **Automatic or manual temperature compensation**
- **Pressure, R.H., salinity compensation**
- **Dual isolated output:**
  - 0/20 mA or 4/20 mA selectable
  - programmable input on the span
- **Automatic or manual operation**
- **Dual set-point with hysteresis, delay, and min/max programmable functions**
- **Autoclean relay and holding function for input and outputs**
- **EEPROM parameters storage**
- **Automatic overload protection and reset**
- **Extractable terminal block**
- **96x96 (1/4 DIN) housing**
- **Power: 110/220 VAC**

## Specifications

### \* Optical D.O. sensor

cable length: 10 m

### \* Scales

0/400 - 0/200.0 mmHg

0/400 - 0/200.0 % air saturation

0/40.0 - 0/20.0 PPM

0/40.0 - 0/20.00 mg/l

\* Software filter 90%RT: 0.5/50.0 s for small/large variations

Zero: ± 40 mV

Sensitivity: 20/250 %

### Temperature

measuring and compensation range: +2/+52 °C or 28,4/125,5 °F

Zero: ± 2 °C or ±3,6 °F

Input: Pt1000 2 wires

### Temperature compensation

Internal table

Reference temperature: 20 °C or 68 °F

Manual compensation: 0/50.0 °C or 32/122 °F

### Secondary parameters

Pressure: 500/850 mmHg

Salinity: 0/60,000 PPM

Relative humidity: 0/100 %

### Analog outputs

Dual isolated for D.O and temperature

### Set points

Dual with ON/OFF programmable functions

### \* Autoclean function

Disable - manual - auto + manual

\* Repetition cycle: 0.1/24 hours

\* Number of cycles: from 1 to 10

\* Compressor time: 0.5/60.0 sec.

\* Discharge time: 0.5/10.0 sec.

\* Holding time: 0/20.0 min. (for measuring, outputs, relays)

### Option 091.4143

9/36 VDC power supply

*The technical specifications may be changed without notice*

## Probes and accessories

This instrument uses the OD 8382 optical dissolved oxygen probe.

The controller can be installed in the autoclean enclosure IP65 (NEMA4X), here below.



# Electrochemical Monitors

## OD 8382

Optical d. oxygen sensor - autoclean



This unique submersible probe has been designed to measure dissolved oxygen based on fluorescent technology.

The measuring system consists of:

- optical device complete with a layer of fluorescent material,
- electronic circuit with an exciting beam for the fluorescence detection,
- built-in amplifier,
- Pt1000 for temperature compensation
- digital input for calibration and configuration
- nozzle for the autoclean by external pressure air

The probe is powered by the B&C controller OD 7685.110, which provides the measuring readout, 2 set-points, 2 analog outputs and the relay to activate the cleaning cycle.

The most common applications of this probe include: water quality monitoring, municipal and industrial water treatment and aquaculture.

### Principle of operation

A light beam of a specific wavelength is sent to a special fluorescent layer in contact with the sample.

The absorbed light energy is partially released as a light pulse with an higher wavelength.

This phenomena is called fluorescence.

If oxygen molecules are in contact with the sensing layer, the fluorescing is reduced (quenching).

By measuring the amount of quenching it is possible to determine the oxygen concentration.

The advantages of this measuring method are the absence of electrolyte and membrane, the possibility to measure the oxygen concentration in water or in air, and a good sensitivity in a low oxygen concentration.

### Specifications

<b>Sensing element:</b>	replaceable
<b>Scale:</b>	0.0/200.0 % air
<b>Resolution:</b>	0.1 % air
<b>Drift:</b>	< 1% year
<b>Response time:</b>	< 30s
<b>Temperature compensation:</b>	internal table
<b>Temperature sensor:</b>	RTD Pt1000
<b>Compensation range:</b>	0.0/50.0 °C
<b>Power supply:</b>	from OD 7685.110
<b>Operating temperature:</b>	-5/+50 °C
<b>Pressure:</b>	1 bar max
<b>Autoclean:</b>	built in nozzle
<b>Air pressure:</b>	3 bar max
<b>Material:</b>	PVC, silicon
<b>Diameter:</b>	60 mm
<b>Length:</b>	165 mm total
<b>Thread:</b>	2"NPT
<b>Cable:</b>	8x0,25 L=10m
<b>Sensor life:</b>	>1 year, not exposed to sun light
<b>Protection:</b>	IP68
<b>EMC/RFI conformity:</b>	EN 61326
<b>Marking:</b>	CE

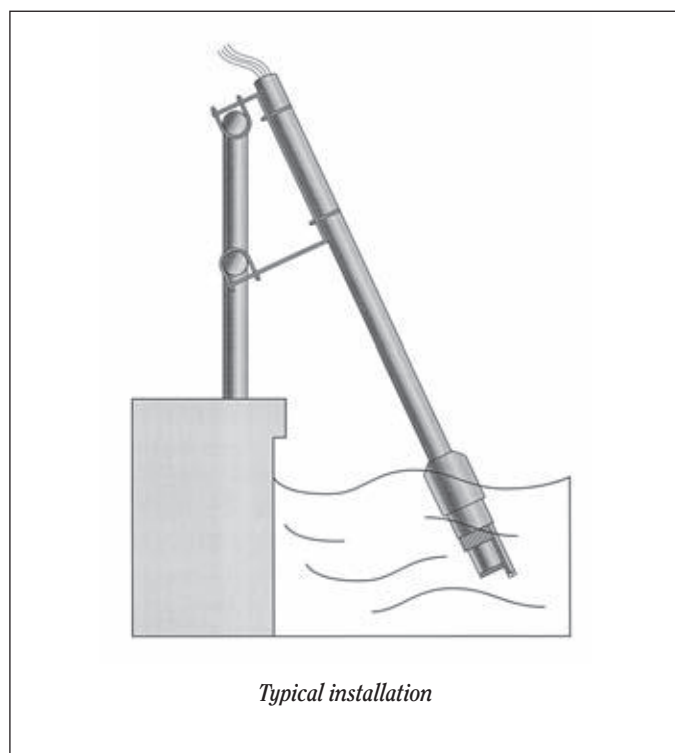
*The technical specifications may be changed without notice*

### Accessories

**0012.450043** Adapter for extension pipe

**0012.000624** Swivel mounting. The supply includes 0012.450043

**0012.440040** 33 mt PVC tubing



# Electrochemical Monitors

## OD 7685.010

Autoclean Dissolved Oxygen controller



Add the following to the common Features/Specifications of the 7685 Series shown overleaf

- **Applications:**
  - water treatment
  - activated sludge
  - de-nitrification
  - fish pond
- **Input from galvanic cell**
- **Scales: PPM - mg/l - % air sat. - mmHg**
- **Autoranging**
- **Temperature readout in °C or °F**
- **Dual filter software**
- **Calibration parameters display**
- **Dual set-point and alarm conditions display**
- **Autocalibration in air**
- **Automatic or manual temperature compensation**
- **Pressure, R.H., salinity compensation**
- **Dual isolated output:**
  - 0/20 mA or 4/20 mA selectable
  - programmable input on the span
- **Automatic or manual operation**
- **Dual set-point with hysteresis, delay, and min/max programmable functions**
- **Autoclean relay and holding function for input and outputs**
- **EEPROM parameters storage**
- **Automatic overload protection and reset**
- **Extractable terminal block**
- **96x96 (1/4 DIN) housing**

## Specifications

### \* Galvanic cell

membrane: 1 mil - 2 mil - 5 mil (5 mil standard)  
cable length: 15 m

### \* Scales

0/400 - 0/200.0 - 0/20.00 mmHg  
0/400 - 0/200.0 - 0/20.00 % air saturation  
0/40.0 - 0/20.0 PPM - 0/2000 PPB  
0/40.0 - 0/20.00 mg/l - 0/2000 µgr/l

\* Software filter 90%RT: 0.5/50.0 s for small/large variations  
Zero: ± 1 mV  
Sensitivity: 62.5/212.5 %

### Temperature

measuring and compensation range: +2/+52 °C or 28,4/125,5 °F  
Zero: ± 2 °C or ±3,6 °F  
Input: Pt100 3 wires

### Temperature compensation

Internal table for each membrane type  
Reference temperature: 20 °C or 68 °F  
Manual compensation: 0/50.0 °C or 32/122 °F

### Secondary parameters

Pressure: 500/800 mmHg  
Salinity: 0/60,000 PPM  
Relative humidity: 0/100 %

### Analog outputs

Dual isolated for D.O and temperature

### Set points

Dual with ON/OFF programmable functions

### \* Autoclean function

Disable - manual - auto + manual  
\* Repetition cycle: 0.1/24 hours  
\* Number of cycles: from 1 to 10  
\* Compressor time: 0.5/60.0 sec.  
\* Discharge time: 0.5/10.0 sec.  
\* Holding time: 0/20.0 min. (for measuring, outputs, relays)

### Option 091.4143

9/36 VDC power supply

*The technical specifications may be changed without notice*

## Probes and accessories

This instrument uses the OD 8182 dissolved oxygen probe.

It is normally installed in the OD 8112 autoclean assembly

# Electrochemical Monitors

## OD 8112

### Autoclean D.Oxygen monitor



In this control box are installed the OD 7685.010 monitor and the cleaner consisting of compressor, reservoir and solenoid.

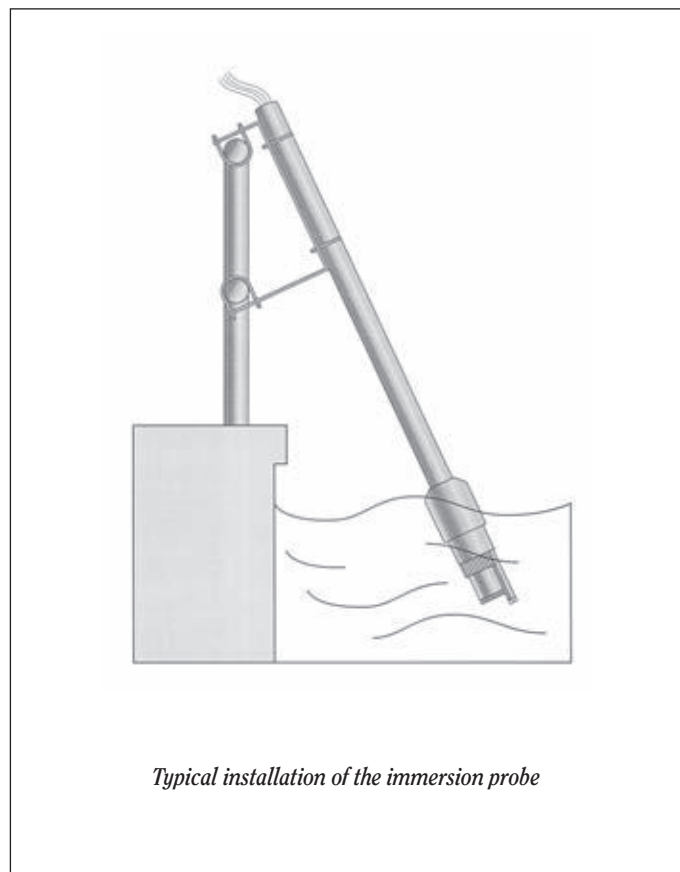
**Air pressure:** 3 bar

**Dimensions:** 376 x 306 x 207 mm

**Protection:** IP 65

**Power:** 220 Vac 50/60 Hz 150 VA

OD 7685.010 specifications are described on the page related to the instrument.



*Typical installation of the immersion probe*

## OD 8182

### Autoclean D.Oxygen probe



The probe is equipped with a galvanic membraned sensor and a RTD temperature element.

A titanium nozzle injects the pressure air for the membrane cleaning.

The package includes the connecting cable and:

**0012.020007** DO sensor

**0012.040003** Assembled Lead electrode

**0012.050001** Kit of 10 membranes 5 mils

**0012.090007** Electrolyte bottle 120 cc. (4 OZ)

**0012.050014** Screw and OR Kit

**0012.440040** 33 m PVC tubing

## Specifications

Submersible type with top holder and screw-in sensor

**Response time** 90% in 180 s with 5 mil membrane

**Temp. sensor** Pt100 integral to sensor

**Temp. limits** -5 to +55 °C

**Connections** 5 wires cable, 15 m (150 m max)

15 m flexible tubing 1/4"-3/8"

**Materials** Noryl and stainless steel

## Accessories

Choose one of the following accessory for the installation

**0012.450043**

Adapter for extension pipe

**0012.000624**

Swivel mounting including 0012.450043 adapter

## CL 7685

Potentiostatic controller for  
Free Chlorine, Chlorine dioxide, D. Ozone



Add the following to the common Features/Specifications of the 7685 Series shown overleaf

- **Applications:**
  - drinking water
  - bottling industry
- **Input from:**
  - potentiostatic sensor
  - Pt100 3 wires
- **Ranges:** 0/2 PPM and 0/20 PPM autoranging
- **Dual filter software**
- **Calibration mode:** immediate or postponed
- **Calibration parameters display**
- **Dual set-point and alarm conditions display**
- **Automatic or manual temperature compensation**
- **Isolated output:**
  - 0/20 mA or 4/20 mA selectable
  - programmable input on the span
- **Automatic, manual or simulated operation**
- **Dual set-point**
- **Selectable actions**
  - ON/OFF
  - PFM Pulse frequency modulation
  - PWM Pulse width modulation
  - hysteresis, delay, and min/max programmable functions
- **Alarm:**
  - continuous/flashing
  - min/max and delay programmable
  - on set-points timing
- **Autoclean relay**
  - auto + manual/manual action
  - holding function for input and outputs
- **EEPROM parameters storage**
- **Automatic overload protection and reset**
- **Extractable terminal block**
- **96x96 (1/4 DIN) housing**

## Specifications

### Input Current

2  $\mu$ A/PPM at 20 °C

### \* Scales

0/2.000 PPM - 0/20.00 PPM

(Cl<sub>2</sub>, ClO<sub>2</sub>, D.O<sub>3</sub>)

Zero adjustment:  $\pm$  0.3  $\mu$ A

Cell sensitivity: 12.5/250 %

\* Polarization: -200 mV (0/-1250 mV)

\* Temperature coefficient: 0/4.0 %/°C

\* Filter software 90%RT: 0.4/20.0 s for small/large variations

### Temperature

Input: Pt100 3 wires

Measuring and compensation range: -2/52 °C

Resolution: 0.1 °C

Zero adjustment:  $\pm$  1 °C

### Set-point A and B

\* Selectable action: ON/OFF - PFM - PWM

### PFM/PWM action

Proportional band: 0/10 % of the scale

Pulse frequency: 0/120 pulse/min

Pulse width: 0/99.9 s

### Option 091.3711

Dual analog output

The user may select the temperature output

### Option 091.4143

9/36 VDC power supply

*The technical specifications may be changed without notice*

## Accessories

### SZ 283

Potentiostatic electrode

### SZ 7231

Flow cell for SZ283

### SZ 7233

Flow cell for 3 sensors: SZ283, pH, ORP

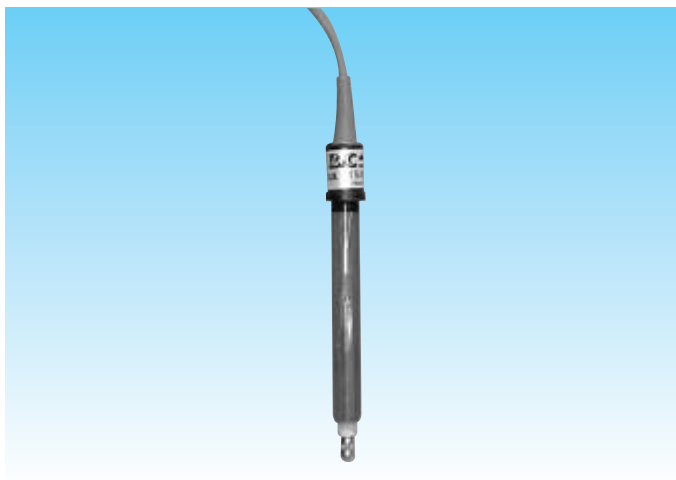
### SZ 7251

Autoclean flow cell

# Electrochemical Monitors

## SZ 283

### Potentiostatic electrode



This sensor is made for the measurement of Free Chlorine, Chlorine dioxide and D.Ozone in water.

The potentiostatic method is an “amperometric” measure with constant potential, made through 2 metal electrodes and a reference electrode dipped in a cell.

The current running through the cell consumes Chlorine or Ozone contents, therefore they must be renewed through a constant liquid flow.

In the traditional amperometric measurement it results difficult to maintain a constant relation between cell current and Chlorine (Ozone) concentration, especially near the zero, because of the ORP and liquid resistance effects. As result frequent zero and sensitivity calibration are needed.

In the potentiostatic measuring, the electrodes potential is electronically controlled in relation to the liquid, providing a linear relationship current/concentration and a very stable zero value in oxidative absence.

The sensor is shaped so that it is easy to clean and replace.

It is suggested to place the sensor in a measurement cell SZ 7231 or SZ 7233 provided with overflow in order to maintain the sample flow constant.

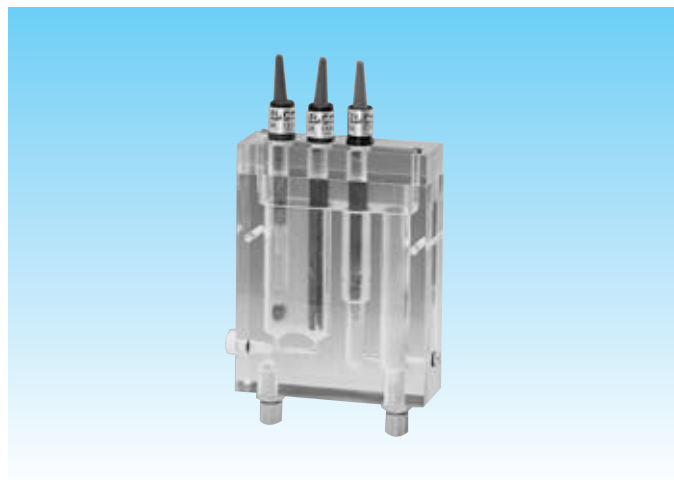
If placed in the SZ 7251 cell or in a pipe-line, in order to avoid an instable measurement, it is necessary for the flow to be constant.

## Specifications

**Electrodes:** 2 Platinum rings  
**Reference:** gel with annular junction  
**Body:** glass  
**Cable:** 3 m  
**Max pressure:** 10 bar at 20°C  
**Dimensions:** 110x12 mm

## SZ 7231 – SZ 7233

### Flow cells



This series of cells is made for the measurement of Residual Chlorine with a potentiostatic method.

The cell's manufacturing characteristics allow the sample to run through the potentiostatic electrode site with a constant velocity. The in-flow can be regulated through a check valve.

The SZ 7231 cell is for the potentiostatic electrode and the Temperature sensor, while the SZ 7233 cell is also for additional pH and O.R.P. electrodes.

The package includes a 1/4" fitting, 2 meters of 4x6 plastic tubing for the sample drawing and 2 screws for wall fastening.

## Specifications

**Material:** clear acrylic resin  
**Inlet:** 1/4" fitting  
**Outlet:** fitting for 10x14 mm tubing  
**Connection tubing:** 2 m 4x6 tubing  
**Flow:** about 10/30 litre/hour approx  
**Temperature:** 0/50°C  
**SZ 7233 dimensions:** 150 x 120 x 40 mm  
**SZ 7231 dimensions:** 150 x 90 x 40 mm  
**Sensors site:** diameter 12 mm for pH/ORP/Cl  
diameter 5 mm for temperature  
**Suggested sensors:** pH = SZ 165  
ORP = SZ 275  
Cl = SZ 283  
°C = SP 514

# Electrochemical Monitors

## SZ 7251

Auto clean flow cells  
for Residual Chlorine/D.Ozone



This cell is designed for the in-line or in-flow continuous measurement of Residual Chlorine or Dissolved Ozone in solution.

The measuring sensor is inserted in the holder of the cell, which protects the body and places the sensing part in the right position into the cell.

The sample inlet flow will create a continuous movement of the internal balls whose contact with the sensing part of the sensor will perform a self cleaning action.

The package includes:

- plastic tube for the connection to the sample
- fixing clamp
- spare balls.

The sample inlet pressure must be constant in order to get a continuous flow necessary to obtain stable and reliable measuring.

## Specifications

**Transparent body:** acrylic

**Holder:** PVC

**O Ring:** NBR and fluoridated elastomer

**Fittings:** polypropylene

**Tubing:** polythene

**Balls:** N° 20 into the body

**Inlet/outlet:** 1/8 " fittings

**Diameter:** 40 mm max.

**Length:** 150 mm max.

**Flow:** 15/40 liter/hour constant

**Temperature:** 0/50 °C

**Connecting tubing:** Diameter 4X6 mm. L=5 m

**Sensor:** to be ordered separately depending on the application

## CL 7901 – OZ 7901

Flow cells and sensors  
for Free Chlorine/D.Ozone



The selective membrane polarographic sensor is inside a flow cell with overflow, for measurements with CL 7685.010, CL 7685.001 or CL 3630.

### CL 7901

For Free Chlorine measurement.

The package contains:

- 0012.000066 Free Chlorine sensor
- 0012.030029 a 7 m cable
- 0012.000043 flow cell
- 0012.090011 electrolyte 125 cc
- 0012.050005 kit of 10 membranes

### OZ 7901

For D.Ozone measurement.

The package contains

- 0012.000042 D. Ozone sensor
- 0012.030029 a 7 m cable
- 0012.000043 flow cell
- 0012.090008 electrolyte 125 cc
- 0012.050002 kit of 10 membranes

## Specifications

**Response time:** 90% in 60 s

**Temperature sensor:** RTD Pt100 built-in

**Temperature limits:** 5/+55 °C

**Material:** Noryl and stainless steel

**Type of cell:** overflow system

**Material:** clear acrylic

**Inlet:** 25/110 litre/hour

**Inlet fitting:** 1/4"

**Outlet fitting:** 1/2"

Sensors for combined Chlorine, Chlorine Dioxide and in-line measurements are available.

## CL 7685.010

Residual Chlorine - D.Ozone controller  
for selective membraned sensors



Add the following to the common Features/Specifications  
of the 7685 Series shown overleaf

- **Applications:**
  - drinking water
  - water treatment
  - bottling industry
  - OEM
- **Input from selective membraned sensors:**
  - Free Chlorine, Chlorine dioxide, Combined Chlorine, D.Ozone
  - Total Chlorine gas sensing method
- **Input from Pt100 3 wires**
- **Ranges: 0/2 PPM - 0/20 PPM - 0/200 PPM autoranging**
- **Dual filter software**
- **Calibration mode: immediate or postponed**
- **Calibration parameters display**
- **Dual set-point and alarm conditions display**
- **Temperature display**
- **Automatic or manual temperature compensation**
- **Isolated output:**
  - 0/20 mA or 4/20 mA selectable
  - PPM or °C programmable input on the span
- **Automatic, manual or simulated operation**
- **Dual Set-point:**
  - **Selectable actions**
    - ON/OFF
    - PFM pulse frequency modulation
    - PWM pulse width modulation
  - hysteresis, delay, and min/max programmable functions
- **EEPROM parameters storage**
- **Automatic overload protection and reset**
- **Extractable terminal block**
- **96x96 (1/4 DIN) housing**

## Specifications

### Input current

160 nA/PPM at 20 °C

### \* Scales

0/2.000 PPM - 0/20.00 PPM - 0/200.0 PPM

(Cl<sub>2</sub>, ClO<sub>2</sub>, D.O<sub>3</sub>, SO<sub>3</sub><sup>2-</sup>)

Zero adjustment: ± 200 nA

Cell sensitivity: 12.5/250 %

\* Polarization: -200 mV (0/-1250 mV)

\* Temperature coefficient: 0/4.0 %/°C

\* Filter software 90%RT: 0.4/50.0 s for small/large variations

### Temperature

Input: Pt100 3 wires

Measuring and compensation range: -2/52 °C

Resolution: 0.1 °C

Zero adjustment: ± 1 °C

### Set-point A and B

\* Selectable action: ON/OFF - PFM - PWM

### PFM/PWM action

Proportional band: 0/10 % of the scale

Pulse frequency: 0/120 pulse/min

Pulse width: 0/99.9 s

### Option 091.4143

9/36 VDC power supply

*The technical specifications may be changed without notice*

## Accessories

### CL 7901

Flow cell and sensor for Free Chlorine

### OZ 7901

Flow cell and sensor for D. Ozone

### Sensors available

For Combined Chlorine, Sulfite.

For Total Chlorine gas sensing method.



# Electrochemical Monitors

## CL 7685.001

PID controller for  
D.Ozone, Residual Chlorine



Add the following to the common Features/Specifications of the 7685 Series shown overleaf

- **Applications:**
  - Ozone generators
  - drinking water
  - water treatment
  - bottling industry
  - OEM
- **Input from**
  - Potentiostatic sensor
  - Polarographic selective membraned sensors:
  - Total Chlorine gas sensing method
- **Input from Pt100 3 wires**
- **Ranges: 0/2 PPM - 0/20 PPM - 0/200 PPM autoranging**
- **Dual filter software**
- **Calibration mode: immediate or postponed**
- **Calibration parameters display**
- **Dual set-point and alarm conditions display**
- **Temperature display**
- **Automatic or manual temperature compensation**
- **Isolated output:**
  - 0/20 mA or 4/20 mA selectable
  - programmable input on the span
- **PID output:**
  - 0/20 mA or 4/20 mA isolated output
  - dual relay for stepping motor
- **Automatic or manual operation**
- **Alarm on set-point deviation**
- **Continuous/flashing alarm**
- **EEPROM parameters storage**
- **Automatic overload protection and reset**
- **Extractable terminal block**
- **96x96 (1/4 DIN) housing**

## Specifications

- \* **Measuring:** D.Ozone/Residual Chlorine
- \* **Measuring cell:** Potentiostatic/Polarographic

### Polarographic cell

Current: 160 nA/PPM at 20 °C  
\* Scales: 0/2.000 PPM - 0/20.00 PPM -0/200.0 PPM  
Zero adjustment: ± 200 nA  
Cell sensitivity: 12.5/250 %

### Potentiostatic cell

- \* Scales: 0/2.000 PPM - 0/20.00 PPM  
Zero adjustment: ± 2 µA  
Cell sensitivity: 12.5/250 %

- \* **Polarization:** -200 mV (0/-1250 mV)
- \* **Filter software 90%RT:** 0.1/20.0 s for small/large variations

### Temperature

Input: Pt100 3 wires  
Measuring and compensation range: -2/52 °C  
Manual temperature: -2/52 °C  
Resolution: 0.1 °C  
Zero adjustment: ± 1 °C  
\* Temperature coefficient: 0/4.0 %/°C

### Regulation:

- \* 4/20 mA or 0/20 mA/Stepping motor
- \* Motor time: 10/120.0 s
- \* Dead time: 0/20.0 s  
Manual starting position: 0/100.0 %

### Set-point: any value in the measuring range

- \* Dead band: 0.2/20.0 % (stepping motor)  
Proportional band: 0.1/400.0 %
- \* Derivative: 0/1200 s
- \* Integral: 0/3600 s

### Option 091.4143

9/36 VDC power supply

*The technical specifications may be changed without notice*

## Compatible accessories

### SZ 283

Potentiostatic measuring sensor

### SZ 7231

Flow cell for Chlorine and D. Ozone

### SZ 7233

Flow cell for Chlorine / D. Ozone, pH, ORP sensors

### SZ 7251

Autoclean flow cell

### CL 7901

Flow cell and sensor for Free Chlorine

### OZ 7901

Flow cell and sensor for D. Ozone

# Electrochemical Monitors

## TU 7685 - TU 7685.010

Turbidity and Suspended solids



Add the following to the common Features/Specifications of the 7685 Series shown overleaf

- Input from preamplified sensor
- Manual, automatic operation
- Dual filter software
- 0/20 or 4/20 mA selectable output, programmable on the input scale
- 2 Set point with min/max function, hysteresis and adjustable delay
- Alarm: min/max turbidity, set point timing, dirty lens, empty cell, external light too high
- Check signal of dirty lens
- Autoclean relay with programmable cycle repetition, cleaning and holding time
- Easy to use software with 3 access levels: display, calibration and configuration of process parameters

### Additional features of TU 7685.010

- Manual, automatic, or simulated operating mode
- Selection of the probe TU820 (USEPA 180.1)
- Adjustable coefficient for mg/l/NTU both PSL and SiO<sub>2</sub>
- Manual or automatic zero calibration
- Fine adjustment of the analog output
- On/Off of the hold of the analog output during the calibration
- Burned lamp alarm
- Continuous or flashing alarm

### Specifications

<b>Range TU 7685:</b>	4.000/400.0 NTU - 40.00/4000 NTU 9.999/999.9 mg/l - 99.99/9999 mg/l of SiO <sub>2</sub> 9.999/999.9 ppm - 99.99/9999 ppm of SiO <sub>2</sub>
<b>Range TU 7685.010:</b>	4.000/400.0 NTU - 40.00/4000 NTU 4.000/400.0 mg/l - 40.00/4000 mg/l of SiO <sub>2</sub> 9.999/999.9 ppm - 99.99/9999 ppm of SiO <sub>2</sub>

**Resolution:** 0.05% of scale

**Zero of the probe:** 0.0/10.0 % f.s.

**Sensitivity:** 80.0/120.0 %

**Filter software 90%RT:** 5/220 s for small/large variations

**Set point A/B:** ON-OFF

**Hysteresis:** 0/10 % of the scale

**Relay delay:** 0.0/99.9 s

**Relay contacts:** 5 A 220 V

**Low/high alarm:** 0 to full scale

**Autoclean:** Manual/Auto+Manual

**Analog output:** 0-20/4-20 mA isolated

**Response time:** 10 s for 98% of input

**R max:** 600 ohm

**Humidity:** 95% without condensate

**Power:** 110/220 Vac +/-10% 50/60 Hz 5 VA max

**Isolation:** 4000 V (IEC 348)

**Dimensions:** 96x96x155 mm (1/4 DIN)

#### Options

**091.3713:** Dual analog output

**091.4141:** 9/36 VDC power supply

*The technical specifications may be changed without notice*

### In-line measuring probes

- **TU 810** Body in PVC. Method EN 27027 ISO 7027
- **TU 820** Body in PVC. Method USEPA 180.1
- **TU 8105** Body in PVDF. Method EN 27027 ISO 7027

### Submersible measuring probe

- **TU 8182** Body in PVC. Method EN 27027 ISO 7027

### Accessories for in-line measuring probes

- **TU 910** Flow cell for TU 810, TU 8105 and TU 820
- **SZ 9481** Cable 10 m + connector
- **SZ 9483** Cable 30 m + connector

# Electrochemical Monitors

## TU 810 - TU 8105 - TU 820 Turbidity probes



### Common Specifications

**Measuring method:** Nephelometric

**Response time:** 10 s

**Internal sensor:** for empty cell and dirty lens checking

**Preamplifier:** built-in

**Power:**  $\pm 12$  Vdc from TU 7685

**Ambient Temperature:** 0/50 °C

**Sample Temperature:** 0/50 °C

**Sample Pressure:** 6 bar max. a 20 °C

**Connector:** IP 67

**Optical window material:** Acrylic

**Pipe Tee for direct inline mounting:** 2" (DN 50)

**Diameter:** 40 mm

**Cable length:** 150 m max.

### TU 810 - TU 8105 Specifications

**Measuring method:** Nephelometric (ISO 7027 - EN 27027)

**Range:** 0/4000 NTU

**Resolution:** 0.001 on scale 0/4.000 NTU

0.01 on scale 0/40.00 NTU

0.1 on scale 0/400.0 NTU

1 on scale 0/4,000 NTU

**Accuracy:**  $\pm 5\%$  of reading on 0/400 NTU

$\pm 10\%$  of reading on 400/4,000 NTU

**Light source:** LED I.R. 890 nm

**TU 810 material:** Body in PVC - O Ring: NBR (Acrylat Nitrile)

**TU 8105 material:** Body in PVDF - O Ring: NBR (Acrylat Nitrile)

### TU 820 Specifications

**Measuring method:** Nephelometric (USEPA 180.1)

**Range:** 0/400 NTU

**Resolution:** 0.001 on scale 0/4.000 NTU

0.01 on scale 0/40.00 NTU

0.1 on scale 0/400.0 NTU

**Accuracy:**  $\pm 5\%$  of reading on 0/400 NTU

**Light source:** Tungsten lamp 2200 °K

**Average life of the lamp:** 100,000 hours

**Sensor sensitivity:** 600 nm

**Material:** Body in PVC - O Ring: NBR (Acrylat Nitrile)

## TU 910 Turbidity flow cell



This measuring cell has been designed for using with TU 810, TU 820 or TU 8105 turbidity probes.

It allows very accurate measurements even at very low turbidity values, as requested by drinking water applications.

It is provided with a flow control to avoid air bubbles from grab samples under pressure.

Cleaning and calibrating operations are very easy.

The package includes the 1892702 adaptor and O Ring 2713118 for the TU 810 - TU 820 - TU 8105 installation.

### Specifications

**Applications:** in flow measurement

**Flow of sample:** 0.2/25 l/min.

**Temperature:** 0/50 °C

**Temperature of sample:** 0/50 °C

**Pressure of sample:** 6 bar max. a 20 °C

**Material:** PVC

**Collar nut thread diameter:** 2 1/2"

**Fittings:** 1/4"

**Tubing:** PVC 4x6 mm l=5m

*The Technical Specifications may be changed without notice*

# Electrochemical Monitors

## Turbidity meter Autoclean system

**Install & forget**



The on-line monitoring system is designed for the continuous measurement of Turbidity in water.

The full scale operating range of the system may be selected by the user from 0-4.000 to 0-4,000 NTU or from 0-9.999 to 0-9,999 mg/l of SiO<sub>2</sub>, and the sensing system will operate on water streams with temperature from 0 to 50 °C.

The measured Turbidity is displayed on a backlit liquid crystal display on the front of the instrument. The Turbidity monitor is well suited for wastewater treatment, effluent monitoring, or stream monitoring.

The measuring method is Nephelometric.

A light source and a photocell are positioned with their optical axes 90° from each other. The emitted light is scattered by particles in the process and received by the photocell, in accordance to standard ISO 7027.

The assembly automatically delivers high pressure air to the tip of the sensor to effectively blast accumulated growth from the optical lens. For special applications, the Turbidity monitor can be supplied without the cleaner, and the customer will provide the pressure air to the sensor.

Submersible sensors are designed for direct immersion in the tank or flowing stream.

A 10 m cable is potted into the top section of the sensor assembly, and connects directly to the Turbidity monitor.

A separate tubing connection located at the top of the sensor assembly is provided for connection of a 10 m length of plastic tubing between the sensor and the monitor.

The Turbidity sensor assembling is mounted to a 1" pipe using a special mounting adapter.

The 1" pipe is attached to the tank handrail with a bracket assembly that holds the sensor at a slight angle in the tank.

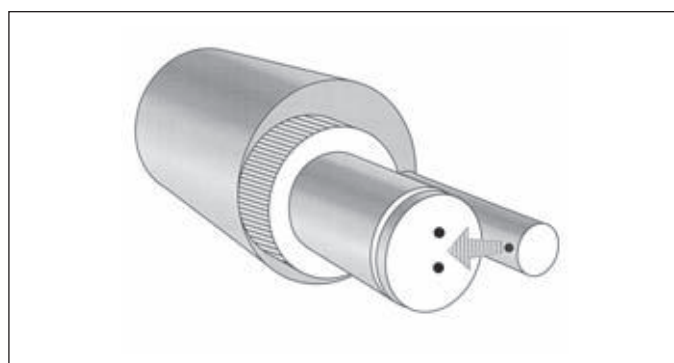
Once installed and placed into operation, the Autoclean Turbidity sensor will provide months of reliable Turbidity measurement in almost any application.

Sensor should be checked for build-up after the first 3 months to verify that the cleaner is keeping the lens clean.

The sensor cleaning frequency is user programmable, and units are shipped with a default cleaning frequency of once every 24 hours.

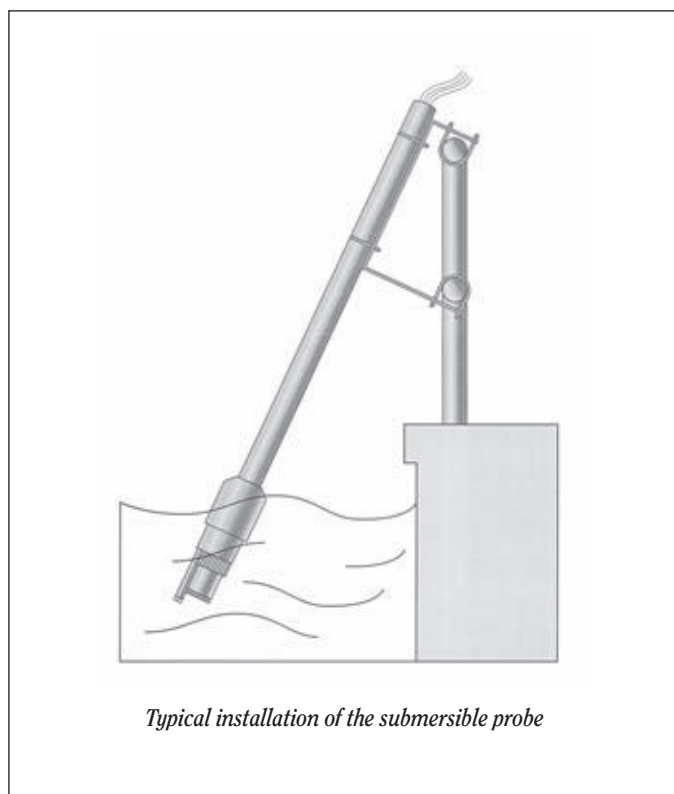
This frequency has proven sufficient for most applications, but can be increased if needed for a specific application.

### Autoclean sensor



### System installation

The installation of the autoclean Turbidity system is quick and simple. A special mounting adapter connects the sensor to standard 1" conduit or pipe, and another adapter provides secure connection of the pipe to a standard handrail system.



*Typical installation of the submersible probe*

# Electrochemical Monitors

## TU 8182

Submersible autoclean Turbidity and suspended solids probe



The Turbidity probe TU 8182 has been designed for submersible applications. It is provided with a built-in device for cleaning the optical lens by means of pressure air blasts.

The probe is operated by the TU 7685 controller. The controller provides the power to the amplifier of the probe and it activates the auto clean relay as programmed by the user.

The cleaning action can be effected by means of a water tight electric module completed with the air compressor. The controller TU 7685 can be installed on the front panel of the auto clean module. (See page 24 of this catalog).

The Turbidity probe contains

- an infrared light source
- a light detector
- a signal detector of the lens fouling
- a built-in amplifier as interface to the Turbidity monitor.

The measuring method is Nephelometric with the detection of the scattered light at 90° by suspended particles, proportional to the Turbidity value.

## Accessories

The installation of the probe needs few accessories to be selected among the following:

- 0012.450043** Extension pipe adapter
- 0012.000624** Swivel mounting
- 0012.440040** 33 m PVC tubing for pressure air

## Specifications

**Measuring method:** Nephelometric (ISO 7027 - EN 27027)

**Range:** 0/4,000 NTU - 0/9,999 mg/l

**Resolution:** 0.001 on scale 0/4.000 NTU

0.01 on scale 0/40.00 NTU

0.1 on scale 0/400.0 NTU

1 on scale 0/4,000 NTU

**Accuracy:** ± 5% of reading on scale 0/400 NTU

± 10% of reading on scale 400/4,000 NTU

**Response time:** 10 seconds

**Light:** LED IR 890 nm

**Internal sensor:** for dry cell and dirty lens checking

**Preamplifier:** built-in

**Power:** ±12 Vdc

**Operating Temperature:** 0/50 °C

**Temperature of the sample:** 0/50 °C

**Pressure of the sample:** 6 Bar max. at 20 °C

**Body:** PVC

**Optical lens:** Acrylic

**Cable length:** 10 m

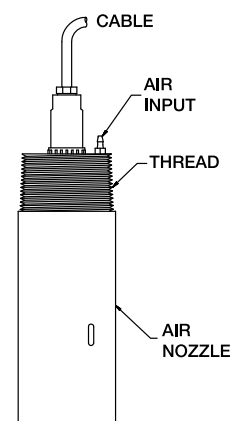
**Protection:** IP68

**Auto clean:** Built-in device

**Air line connector:** 1/4" I/E 3/8"

**Air Pressure:** 3 bar

## Auto clean Sensor



## IC 7685

### Ion Concentration controller



- **Applications:**
  - with ISE electrodes
  - water softeners
  - drinking water
  - electroplating industry
  - Aluminum surface coating
  - CO<sub>2</sub> in biotechnology
- **Input from any ISE and CO<sub>2</sub> electrodes**
- **Input form Pt100 3 wires**
- **Measuring unit: PPM - mg/l - gr/l - mbar - mmHg**
- **Measuring range from 0.01 to 1000**
- **Autoranging**
- **Up to 5 points calibration**
- **Temperature readout**
- **Calibration parameters display**
- **Dual set-point and alarm conditions display**
- **Automatic or manual temperature compensation**
- **Dual filter software**
- **Isolated output:**
  - 0/20 mA or 4/20 mA selectable
  - programmable input on the span
  - dual output as option
- **Automatic or manual operation**
- **Dual set-point with hysteresis, delay, and min/max programmable functions**
- **Alarm:**
  - continuous/flashing
  - min/max and delay programmable
  - on set-points timing

## Specifications

(add common to the 7685 specifications)

### Operating mode

Automatic/manual

### ISE input

\* Ion type X<sup>-</sup>, X, X<sup>+</sup>, X<sup>++</sup>

Measuring scales: 5 decades from 0.01 to 1000

### \* Scales

10.00 - 100.0 - 1000 autoranging

Software filter 90%RT: 0.4/20.00 s for small/large variations

### Calibration

Up to 5 points over all the measuring range

Zero adjustment: ± 100.0 mV

Range: ± 1100 mV

### Temperature

Input: RTD Pt100 3 wires

Measuring range: -10.0/110.0 °C

Resolution: ± 0.1 °C

Zero: ± 2 °C

Manual Temperature: -10/110 °C

### Temperature compensation

Selectable: able/disable

Compensation range: -10/110 °C

Reference Temperature: 20 °C

### Option 091.4143

9/36 VDC power supply

*The technical specifications may be changed without notice*

- **EEPROM parameters storage**
- **Automatic overload protection and reset**
- **Extractable terminal blocks**
- **96X96 (1/4" DIN) housing**

## Accessories

This instrument may use all the ISE sensors for continuous operation

## IC 7685.010

Ion concentration controller with auto calibration and auto cleaning functions.



- **Applications:**
  - with ISE electrodes
  - water softeners
  - drinking water
  - electroplating industry
  - Aluminum surface coating
  - CO<sub>2</sub> in biotechnology
- Input from any ISE and CO<sub>2</sub> electrodes
- Input from Pt100 3 wires
- Measuring unit: PPM - mg/l - gr/l - mbar - mmHg
- Measuring range from 0.01 to 1000
- Autoranging
- Up to 5 points calibration
- Temperature readout
- Calibration parameters display
- Dual set-point and alarm conditions display
- Automatic or manual temperature compensation
- Dual filter software
- Isolated output:
  - 0/20 mA or 4/20 mA selectable
  - programmable input on the span
  - dual output as option
- Automatic or manual operation
- Dual set-point with hysteresis, delay, and min/max programmable functions
- Alarm:
  - continuous/flashing
  - min/max and delay programmable
  - on set-points timing
- Auto calibration function
- Auto clean function

## Specifications

(add common to the 7685 specifications)

### Operating Mode

Automatic/ Manual

### ISE electrodes input

\* Type of Ion: X<sup>-</sup>, X<sup>-</sup>, X<sup>+</sup>, X<sup>++</sup>

Measuring field: 5 decades from 0.01 to 1000

### \* Scale

10.00 – 1000 with auto ranging

Software filter 90%RT: 0.4/20.0 s for small/large variations

### Calibration

Up to 5 points on the entire scale

Zero adjustment: ±100.0 mV

Range mV: ±1100.0 mV

### Temperature

Input: RTD Pt100 3 wires

Measuring field: -10/100°C

Resolution: ±0.1°C

Zero correction: ±2°C

Manual temperature: -10/100°C

### Thermo compensation

Compensation field: -10/110°C

Ref. temperature: 20°C

### \* Auto calibration function

Disabled – Manual – Automatic + manual

\* Repetition time: 1/999 hours

\* Calibration time: 0.1/19.0 minutes

\* Restoring time: 0.1/19.0 minutes

\* Standard solutions: 0.01/1000 PPM

### \* Auto cleaning function

Disabled – Manual – Automatic + manual

\* Repetition time: 1/999 hours

\* Cleaning time: 0.5/60.0 seconds

\* Restoring time: 0.1/19.0 minutes

*Technical specifications could be changed without notice*

- EEPROM parameters storage
- Automatic overload protection and reset
- Extractable terminal blocks
- 96X96 (1/4" DIN) housing

This model includes the auto calibration and auto cleaning functions of the sensor, done by external devices activated by the instruments.

For this, customers can make reliable and affordable ISE analyzers, through the use of ISE electrodes, which in continuous applications, require frequent calibration and cleaning operations.

# Electrochemical Monitors

## Gas Sensing Analyzers

Dissolved residual Sulfide and Sulfite, Total Residual Chlorine



This recent series of highly innovative analyzers is one of the most reliable and competitive system available on the market for dissolved sulphide, sulfite, and for residual total chlorine measuring.

The gas phase measuring is a reliable alternative to traditional ion selective, colorimetric and amperometric methods. In particular, when measuring residual chlorine, this method solves any issue caused by high pH level or by chloramines present in the process

The analyzer consists of two separate components:  
- a chemistry module where the sample is conditioned  
- the measuring microprocessor based controller.

The chemistry module with sensor can be installed as far as 30 meters from the controller.

The sample and a specific reagent flow into a special chamber by means of peristaltic pumps, and they are immediately mixed with a small quantity of air.

Inside the chamber a specific gas amount is formed. Its concentration is proportional to the relative ion present in the measured sample. This gas is detected by a highly selective sensor, which generates and sends a signal to the controller.

The measure is done without any contact between the sample and the sensor. This strongly reduces the sensor contamination, and it strongly reduces the need for period maintenance.

Furthermore, the system guarantees high reliability and stability of the measure.

Depending on the measuring parameter, the system consists of one of the following controllers along with the chemistry module:

**S 7685.012** Dissolved residual sulfide and Sulfite microprocessor based controller

**CL 7685.010** Total residual chlorine microprocessor based controller

## Applications

**Dissolved residual sulfide:** dechlorination plants, textile industry, chemistry industry, food industry, viticulture.

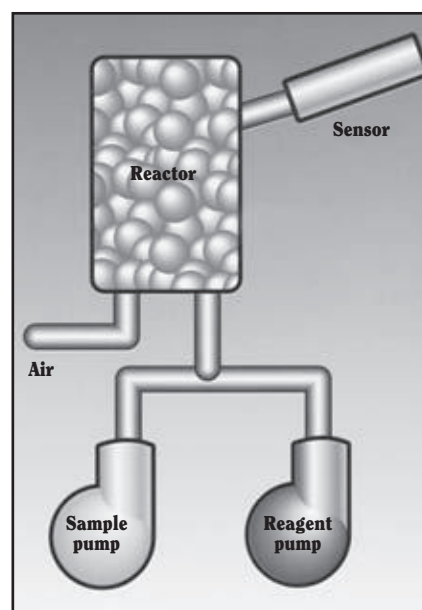
**Dissolved residual sulfite:** drinking water, spa, aeration plants, waste water, tanning industry.

**Total residual chlorine:** paper industry, chemistry industry, drinking water, meet processing, waste water.

## Chemistry Module – Technical specifications

- Supplied with electrochemical sensor for specific gas, with selective membrane.
- Interconnection cable, standard length 7.5 m.
- Supplied with accessories and 6 months disposables
- Response time: 90% in 3 minutes
- Peristaltic pump sample, flow 5 cc/minute
- Peristaltic pump reagent, flow 0.06 cc/minute
- Diaphragm air pump with precision flow control
- Air stripping chamber in PTFE, easy to clean
- Operating temperature: 0/50 °C
- Sample inlet: 1/4" I.D. hose barb
- Sample drain: 1/4" I.D. hose barb
- Recommended sample flowrate: 10/50 l/hour
- Power supply: 220 Vac, 50/60 Hz.

## Measuring principle



**S 7685.012**





# Electrochemical Monitors

## On-line ISE Analyzers Nitrate, Ammonium, Chloride and Fluoride



Thanks to the constant technological improvement applied ion selective sensors (ISE) manufacturing, it has been developed this series of process analyzers. These analyzers guarantee a great performance through time, with a limited cost.

The analyzer consists of two separate components:

- a chemistry module where the sample is conditioned.
- the measuring microprocessor based controller, IC 7685.010

The chemistry module is provided with a holder for the specific ISE and a couple of peristaltic pumps.

The system provides a continuous mixing of the sample with the ISA solutions necessary for the sensors, and an automatic calibration of the analyzer.

The controller IC 7685.010 allows to program the automatic calibration cycles. This eliminated most manual operations, along with providing a long and reliable monitoring within the required range.

### Applications

**Nitrate:** drinking water and supply, municipality, sludge water treatment plants, de-nitrification plants, fertilizers, green houses.

**Ammonium:** sludge water treatment plants, de-nitrification plants, fertilizers, waste water.

**Chloride:** chemical waste water treatment plants, RO desalinization plants, paper industry, chemistry industry, waste water.

**Fluoride:** water supply plants, glass industry, chemistry industry.

### Chemistry Module – Technical Characteristics

- Supplied with ISE sensor, combined, refillable, glass body.
- Interconnection cable, standard length 1.5 m.
- Supplied with small accessories and 6 months disposables
- Response time: 90% in 5 minutes
- Peristaltic pump sample, flow 5 cc/minute
- Peristaltic pump ISA reagent, flow 0.06 cc/minute
- Operating temperature: 0/50 °C
- Sample inlet: 1/4" I.D. hose barb
- Sample drain: 1/4" I.D. hose barb
- Recommended sample flowrate: 30/100 l/hour
- Power supply: 220 Vac, 50/60 Hz.

### IC 7685.010



## Accessories for installing Series 7685, 7635 and 7615

### SZ 7601

Transparent splashproof front door

**Protection:** IP 55

### BC 931.2

Watertight enclosure with transparent front door suitable for the installation of one 96x96 (1/4 DIN) unit.

**Protection:** IP 65 (NEMA 4X)

**Size:** 270x180x238 mm

### BC 931.3

Watertight enclosure with transparent front door suitable for the installation of two 96x96 (1/4 DIN) units.

**Protection:** IP 65 (NEMA 4X)

**Size:** 270x180x238 mm



Example of SZ 7601 installation



Example of BC 931.3 installation

# Electrochemical Monitors

## Series 7635 microprocessor based



- Selectable measuring scales
- Input from Pt100 or Pt 1000 temperature sensors
- Temperature display in either °C or °F
- Automatic/manual temperature compensation
- Selectable and galvanic isolated 0/20 mA or 4/20 mA output
- Configurable logic input for hold or alarm function
- Dual set point min/max and delay selectable
- Min/max alarm and delay relay
- Set point, alarm and relay parameters visualization
- Universal power supply 85/264 Vac – 50/60 Hz
- Power supply option 9/26 Vdc – 24 Vac
- Overload protection
- Extractable terminal blocks

## Series 7335 microprocessor based



### Specifications

(common to all instruments)

#### Display:

LED, 7 segments and 4 digits

#### Inputs:

from selectable measuring sensor,  
from RTD Pt100 or Pt1000 (3 wires)

#### Measuring scale:

selectable according to the model

#### Temperature scale:

0/100.0 °C or 32/212.0 °F

#### Temperature compensation:

manual or automatic 0/100 °C (where applicable)

#### Set-point 1 and 2:

ON/OFF function,  
min/max function,  
delay 0/99.9 s (0/999.9 s for C7635),  
relay contacts SPST, 220 V 5 A resistive load

#### Alarm:

min/max, configurable on all main scale,  
active/non-active function,  
delay 0/99.9 s,  
relay contacts SPDT, 220 V 5 A resistive load

#### Analog output:

selectable 0/20 mA or 4/20 mA,  
response time 2.5 s at 98%,  
isolated 250 V,  
max load 600 ohm

#### Operating temperature:

0/50 °C

#### Humidity:

max 95% without condensation

#### Power supply:

85/264 Vac - 50/60 Hz

#### Power consumption:

5 VA max, with overload protection

#### Terminal blocks:

extractable

#### Dimensions 7635:

96x96x95 mm

#### Dimensions 7335:

96x96x95 mm

#### Weight:

approx. 500 g

#### Mounting:

panel

#### Marking:

CE

#### Option 091.425:

9/36 Vdc – 24 Vac power supply for 7635

#### Option 091.426:

9/36 Vdc – 24 Vac power supply for 7335

*Technical specifications could be changed without notice*

#### The installed software includes:

- an easy access to all main functions
- primary security protection with a password chosen by the user to control access to adjustment of operating parameters
- secondary security protection with a password chosen by the user to control access to the configuration menu for selection of instrument functions
- short messages on the display

## PH 7635 - PH 7335

### pH / ORP controller

This controller can be configured to measure pH or ORP

**Input:** from pH or ORP sensor, and from RTD Pt100 or Pt1000

**pH range:** 0/14.00 pH resolution 0.01 pH.

**ORP range:** -1000/+1000, 0/-1000 mV, 0/+1000 mV resolution 1 mV.

## C 7635 - C 7335

### Conductivity controller

This controller can be configured to be used with cells with different constants.

**Cell constant:** K= 0.10 cm<sup>-1</sup> - K=1.00 cm<sup>-1</sup> - K=10.00 cm<sup>-1</sup>

**Scale:** 2 μS / 20 mS with cells K=0.10 cm<sup>-1</sup>

**Scale:** 20 μS / 200 mS with cells K=1.00 cm<sup>-1</sup>

**Scale:** 200 μS / 2000 mS with cells K=10.00 cm<sup>-1</sup>

**Temperature reference:** 20/25 °C selectable

**ATC coefficient:** 0.00/3.50 %/°C

## CL 7635 - CL 7335

### Free Cl<sub>2</sub>, ClO<sub>2</sub> and dissolved O<sub>3</sub> controller

This controller can be configured to be used with potentiostatic or selective membrane polarographic cells.

**Scales with potentiostatic cells:** 2,000 / 20,00 ppm, 2,000 / 20,00 mg/l

**Scales with selective membrane polarographic cells:**

2,000 / 20,00 / 200,0 ppm, 2,000 / 20,00 / 200,0 mg/l

**Temperature reference:** 20/25 °C selectable

**ATC coefficient:** 0,00/3,50 %/°C

## OD 7635 - OD 7335

### Dissolved oxygen controller

This controller can be configured to be used with polarographic or with galvanic cells.

#### Polarographic cells

**Scales:** 200.0 air saturation, 20.00 mg/l

**Input current in air at 20°C:** 30/300 nA

**Polarization:** -1000/+1000 mV

#### Galvanic cells

**Scales:** 200.0 air saturation, 20.00 mg/l

**Input voltage in air saturation at 20°C:** 30/300 nA

**Reference temperature:** 20°C

**ATC coefficient:** 0.00/4.00 %/°C

**Salinity compensation:** 0.00/60.00 ppt chloride

## BC 7635 - BC 7335

### Universal controller

This controller can provide the necessary power supply (24Vdc/50 mA max) for "current loop"

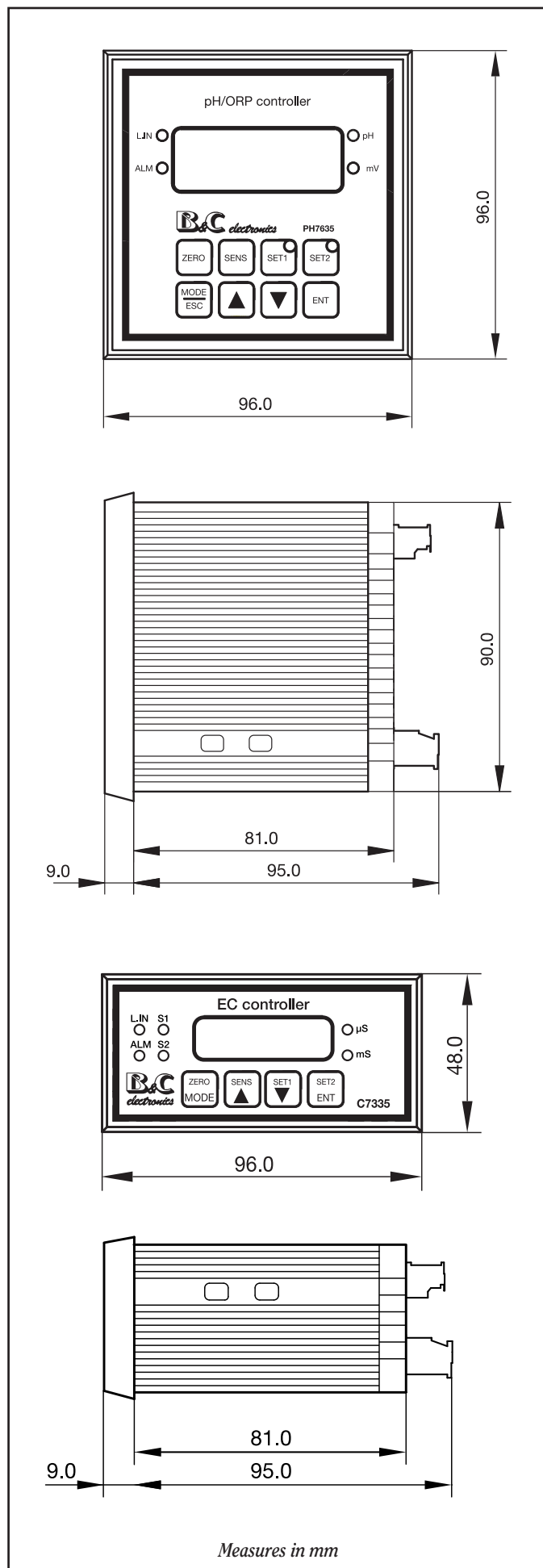
2-wire transmitters.

**Single input:** 0/20 mA or 4/20 mA.

**Differential input:** ± 0/20 mA or ± 4/20 mA.

**Scales:** - 1999 / + 9999, selectable.

**Decimal point:** Selectable



# Electrochemical Monitors

## 565 SERIES Digital controllers

- 9 1/2" x 3 1/2" panel mounting
- Input from sensors and microtransmitters
- 3 1/2 digit LED display
- Selectable scales
- Manual and automatic temperature compensation
- Temperature and temperature coefficient display
- 0/20 mA or 4/20 mA selectable output
- Set-points display
- Two on/off regulators with programmable min/max function and delay action
- Extractable terminal blocks
- Easy installation and maintenance



Example of installation in BC 912 housing

This series of analysers has been designed to carry out the measurement and the regulation of:

- pH
- O.R.P
- Conductivity
- Dissolved Oxygen
- Temperature
- Antifoam

### Common specifications

<b>Zero adjustment:</b> +/- 15 %
<b>Slope adjustment:</b> +/- 20 %
<b>Analog output:</b> 0/20 mA - 4/20 mA selectable, non isolated 300 ohm max.
<b>Relay contacts:</b> 220 V 5 A resistive load - SPDT
<b>Regulator hysteresis:</b> +/- 0.25 % (others as requested)
<b>Switching Time:</b> < 0.5 s
<b>Operating Temperature:</b> 0/50 °C
<b>Humidity:</b> 95% without condensate
<b>Voltage:</b> 110/220 V +/-10 % 50/60 Hz
<b>Fuse:</b> 80 mA T (110 V) 32 mA T (220 V)
<b>Power:</b> 3 VA max.
<b>Weight:</b> 1.014 Kg
<b>Dimensions:</b> 241 x 89 x 157 mm (9 1/2" W x 3 1/2" H x 5 1/4" D)
<b>Option 091.363:</b> isolated output
<b>Option 091.403:</b> voltage 24 Vac
<b>Option 091.204:</b> "window" B regulator

## PH 565.2 pH controller

### Specifications

Add the following to the common Specifications shown overleaf

**Input from:** pH electrode  
microtransmitter mod. 080102.1  
RTD Pt100

**Scale:** 0.00/14.00 pH

**Temperature readout:** 0/100.0 °C

**Temp. compensation:** automatic and manual 0/100 °C

**Temperature sensor:** RTD Pt100

**Input Current:** < 2 pA at 20 °C

**Input Impedance:** > 10<sup>12</sup> ohm

## MV 545.2 O.R.P. controller

### Specifications

Add the following to the common Specifications shown overleaf

**Input:** from electrode  
from microtransmitter mod. 080102.1

**Display scale:** ±1999 mV

**Regulators scale:** ±1000 mV (others as requested)

**Input Current:** < 2 pA at 20 °C

**Input Impedance:** > 10<sup>12</sup> ohm

## C 565.2 Conductivity controller

### Specifications

Add the following to the common Specifications shown overleaf

**Input:** from conductivity cell (2 electrodes)  
from microtransmitter mod. 080310 for 4-electrodes cell  
from microtransmitter mod. 080315 for electrodeless cell  
from RTD Pt100

**Scales with 2-electrodes cell installed:**

0/1.999 0/19.99 0/199.9 0/1,999 microSiemens

**Scales with 080310 or 080315 microtransmitter installed:**

0/1.999 0/19.99 0/199.9 0/1,999 milliSiemens

**Temperature readout:** 0/100.0 °C

**Operating Frequency:** 200 Hz 800 Hz 4.500 Hz selectable

**Temp. compensation:** manual and automatic 0/100 °C

**Temp. Coefficient:** 0 to 5.5 %/°C

**Temperature sensor:** RTD Pt 100

**K adjustment:** 0 to 2 (coarse)

# Electrochemical Monitors

## OD 565.2

Dissolved Oxygen controller



### Specifications

Add the following to the common Specifications shown overleaf

**Input:** from polarographic O<sub>2</sub> cell  
from microtransmitter mod. 080610  
from RTD Pt100  
from galvanic cell (option)

**Scales:** 0 to 199.9 % O<sub>2</sub> (in air value 20.9)  
0 to 199.9 % (in air value 100.0)  
0 to 199.9 mmHg (in air value 155.5)  
0 to 19.99 mg/l (in air value 9.20)

**Temperature readout:** 0/100.0 °C

**Temp. compensation:** manual and automatic 0/100 °C

**Temp. Coefficient:** 0 to 5.5 %/°C

**Temperature sensor:** RTD Pt 100

**Cell Current in air:** 30 nA (others as requested)

## AF 511.2

Antifoam



### Specifications

Add the following to the common specifications shown overleaf

**Input:** Conductivity sensor

**Scale:** 100% at 100 µS

**Sensitivity:** 10 µS (middle scale)

**Analog output:** not available

**Applications:** fermentation plants

### Accessories for 565 Series

#### BC 912

Cabinet designed for two modules

**Dimensions:** 250x190x220 mm

**Protection:** IP 41

#### BC 913

Cabinet designed for three modules

**Dimensions:** 250x280x220 mm

**Protection:** IP 41

#### BC 914

Cabinet designed for four modules

**Dimensions:** 250x370x220 mm

**Protection:** IP 41

#### BC 931.1

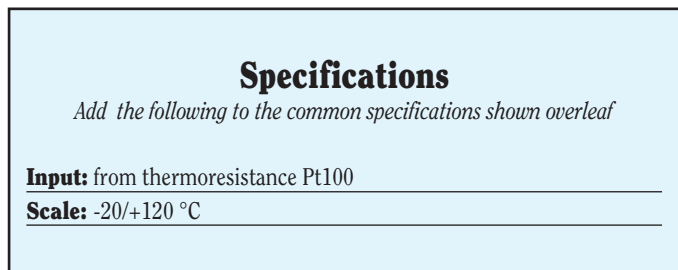
Water-tight enclosure for one module

**Dimensions:** 270x180x238 mm

**Protection:** IP 65 (NEMA 4X)

## TR 545.2

Temperature controller



### Specifications

Add the following to the common specifications shown overleaf

**Input:** from thermoresistance Pt100

**Scale:** -20/+120 °C

# Electrochemical Monitors

## MICROTRANSMITTERS

for industrial probes

- Suitable for 7685 Series and 565 Series
- IP 65 water-tight protection
- Water-tight output connector
- For immersion and in-line probes
- Easy installation and maintenance

### 080102.1

pH and O.R.P. microtransmitter



The microtransmitter is a differential preamplifier enclosed in a water-tight housing and makes the characteristics of the measuring electrodes signal compatible to those of a normal connection cable.

With this technically advanced solution it is possible to make connections at considerably long distances between the measuring probe and the control panel without the use of a shielded cable maintaining a high signal response speed and the complete absence of interferences, therefore greater precision.

The connection between the microtransmitter and the panel regulator is made using a 4-pin waterproof connector type SZ 9490 and a normal 4-wire cable.

The accessory type SZ 9491 consisting of SZ 9490 + 10 m marked cable is available.

The microtransmitter is protected against eventual connection inversions. It is mounted in the usual way on ST type probes, to be installed with PH 7685 - PH 7685.010 - PH 565.2 - MV 545.2 models.

For unfixed mounting, the SZ 911 accessory must be used.  
Recommended cable: 4 x 0.5 mm or 4 x 0.75 mm non shielded.

### Accessories

**SZ 9490** IP 67 connector for cable

**SZ 9491** 10 mt cable and SZ 9490 connector

**SZ 911** Stopper



### 080310

E. Conductivity microtransmitter

This miniature preamplifier is realised in a water-tight enclosure with a waterproof connector for a shielded 7-wire cable for the transmission of Conductivity and Temperature signals.

Normally, as an input, a four-electrode cell with a temperature compensation element is connected, while as an output, the models C 7685 or C 565.2 are connected and automatically assume measuring scales in mS.

The connection between the microtransmitter and the controller is made using a 7-pin waterproof connector (cod. 2231520).

### Specifications

**Input:** for 4 electrodes cell and Pt 100

**Conductivity range:** 0/20 S

**Adjustment:** zero and sensitivity

### Accessories

See accessories for 080315.

### 080610.2

Dissolved Oxygen microtransmitter

This miniature preamplifier is realised in a water-tight enclosure with a waterproof connector for a shielded 7-wire cable for the transmission of dissolved oxygen and temperature signals.

Input comes from polarographic cells and from Pt100 devices.

It is used together with the OD 7685 or OD 565.2 models in cases where there are long distances between the oxygen cell and the controller.

The transmitter can be adjusted as far as the zero point, the sensitivity and the cell polarization is concerned.

The connection between the microtransmitter and the panel regulator is made using a 7-pin waterproof connector (cod. 2231520).

### Specifications

**Input:** Polarographic cell and Pt100

**Range:** 0/20 ppm

### Accessories

See accessories for 080315.

## 080315

### Electrodeless Conductivity microtransmitter



This miniature preamplifier is realised in a water-tight enclosure with a waterproof connector for a shielded 7-wire cable for the transmission of conductivity and temperature signals.

Normally, as an input, an electrodeless cell model SI 315 with a temperature compensation element is connected, while as an output, the models C 7685 or C 565.2 are connected.

By means of this microtransmitter the above standard conductivity controllers can be used as electrodeless conductivity controllers and assume measuring scales in mS.

The connection between the microtransmitter is made using a 7-pin waterproof connector (cod. 2231520).

#### Specifications

**Input:** from electrodeless probes SI 315 - SI 315.1

**Conductivity range:** 0/40 S

**Adjustment:** zero and sensitivity

**Recommended cable:** 7 x 0.25 mm shielded

#### Accessories

Standard cables with connector are also available:

**SZ 9481:** 2231520 + cable length 10 m (33 feet)

**SZ 9483:** 2231520 + cable length 30 m (100 feet)

**SZ911** for unfixed mounting

## Electrodeless Conductivity

### General informations

In a conventional 2-electrode or 4-electrode Conductivity cell there is a contact to the solution and an alternating current, proportional to the solution Conductivity, is passed between the electrodes.

The contamination on the electrodes will usually give a low reading. Similarly the polarization of the electrode surface can lead to erroneous measuring.

All these conditions occur at the electrode/solution interface and their elimination is concerned in the Electrodeless cell.

With electrodeless system two toroidally wound coils on a common axis are encapsulated to form the sensor.

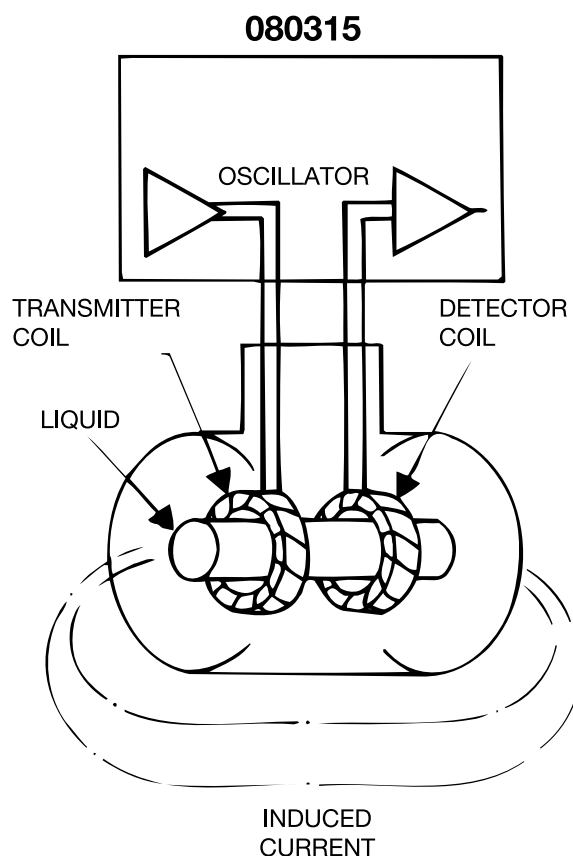
When the sensor is immersed in the solution, a conductivity loop is created through the sensor.

An alternating current is applied to the transmitter coil which induces a current in the Detector coil, proportional to the solution Conductivity.

The advantages of the electrodeless method are more apparent at higher conductivities, in the range above 2 mS.

By using the electrodeless system, maintenance is reduced and reliable measurements can be achieved over extended periods of time.

The connection between the microtransmitter and the controller is made using a 7-pin waterproof connector (cod. 2231520).



# Electrochemical Monitors

## 7615 SERIES 96x96 DIN 43700

- High quality
- 3 1/2 digit LED display
- Automatic temperature compensation
- 0/20mA 4/20mA adjustable output
- 2 min/max control relays
- Extractable terminal blocks
- Isolated output as option



### General informations

This series of controllers has been designed to carry out the measurement and the regulation of:

- pH
- O.R.P
- E. Conductivity
- Free Chlorine
- Temperature

in industrial processes, with continuous readings on digital indicators.

These instruments give both a valid, low cost measurement and regulation system for small industrial and ecological plants, and they can be used as 0/20 mA or 4/20 mA visualized transmitters for field applications.

Connections are made by means of two extractable terminal blocks on the rear side of the instrument, which allow easy cables connection and easy maintenance of the instrument.

The panel mounting instrument's enclosure is designed according to the DIN 43700 standards and it consists of a plastic case with metallic front panel coated with a polycarbonate membrane, to ensure the maximum anticorrosion characteristics.

A transparent splashproof front door can be added to the housing, in order to protect the unit from excessive moisture or corrosive fumes. The package is supplied complete with fixing clamps for panel mounting.

### Functional specifications

#### Display

The controller provides a digital readout on a 3 1/2 digit display that allows reading even at long distances.

#### Calibration

The zero and the sensitivity adjustment is done by means of trimmers mounted on the front panel.

#### Control relays

The controller features two on-off regulators.

Set-points are independent and their value is displayed by pushing a button on the front panel.

Relays activation is displayed on the front panel by their corresponding LEDs.

#### Analog output

Instruments provide a 0/20 mA analog output (4/20 mA, volt on request). The 0/20 mA output may be adjusted to 4/20 mA by the operator.

### Options

Functional features may be extended by following options:

**091.203:** 0/5 s delay and selectable min/max relays function

**091.311:** 4/20 mA output

**091.362:** isolated analog output

**091.403:** 24 Vac power supply

### Common Specifications

**Zero:** adjustment:  $\pm 15\%$

**Slope adjustment:**  $\pm 20\%$

**Output:** 0/20 mA dc 300 ohm max.

**Regulator hysteresis:**  $\pm 0,25\%$

**Switching Time:**  $< 0.5$  s

**Relay contacts:** SPDT 5 A 220 V resistive load

**Temperature:** 0/50 °C

**Humidity:** 95% without condensate

**Voltage:** 110/220 V  $\pm 10\%$  50/60 Hz

**Power:** 3 VA max.

**Terminal blocks:** extractable

**Weight:** 500 g

**Size:** 96 x 96 x 150 mm (1/4 DIN)



# Electrochemical Monitors



## PH 7615 pH controller

Input signal comes directly from pH electrode.  
The controller provides an Automatic Temperature Compensation with the Pt100 device.

### Specifications

**Input:** pH electrode (glass/Ref)  
**ATC:** RTD Pt100  
**Scale:** 0/14.00 pH  
**Input Current:** < 2 pA  
**Input Impedance:** > 10<sup>12</sup> ohm

## MV 7615 O.R.P. controller

Input signal comes directly from an O.R.P. combination electrode (Pt/Ref. - Au/Ref. - Ag/Ref. etc..)

### Specifications

**Input:** ORP electrode  
**Display scale:** ±1500 mV  
**Regulators scale:** 0/1000 mV  
**Input Current:** <2 pA  
**Input Impedance:** > 10<sup>12</sup> ohm

## C 7615 E. Conductivity controller

The instrument is provided with 3 inputs corresponding to 3 scales.  
Automatic Temperature Compensation by means of an RTD Pt100 and scales up to 200 mS are available as options for OEM applications.

### Specifications

**Input:** from conductivity cell  
**Scales:** 0/19.99 - 0/199.9 - 0/1999 µS  
**K adjustment:** from 0 to 2  
**Frequency:** selectable  
**Option 091.131:** scales 0/1.999 - 0/19.99 - 0/199.9 mS  
**Option 091.532:** ATC with Pt100 (Temperature Coefficient 2 %/°C)



## CL 7615 Potentiostatic Chlorine controller

This unit, together with the flow cell and the potentiostatic electrode, is the best and most advanced system for chlorine measurement.  
Because of the potentiostatic measuring method, it is not necessary to recalibrate the zero, the measuring is very accurate and direct chlorine readout appears on the display.  
Also this accurate method prevents the fluctuation of the chlorine levels as on the amperometric and ORP methods.

This potentiostatic system represents the state of the art in the drinking water, swimming pool industry and others.

### Specifications

**Input:** from potentiostatic electrode SZ 283  
**Scale:** 0/5.00 PPM (others as requested)  
**Hysteresis:** ±0.03 PPM

## TR 7615 Temperature controller

This instrument presents all the advantages of a precise and reliable measurement and regulation of temperature in industrial applications.

It is suitable for use in fermentation plants.

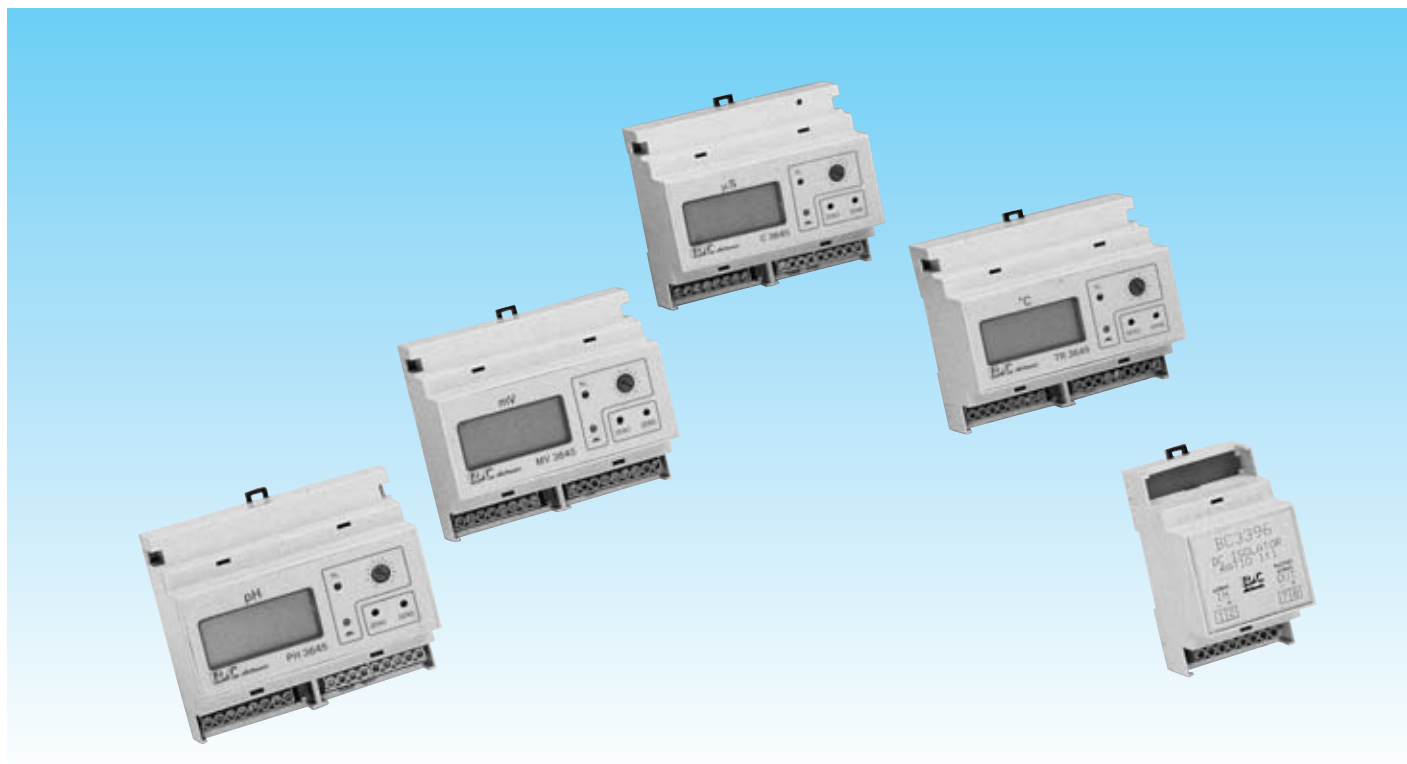
### Specifications

**Input:** from thermoresistance Pt100  
**Scale:** 0/199.9 °C  
**Resolution:** 0.1 °C  
**Sensor connection:** 3 wires

## Accessories for the 7615 Series

See accessories on page 31.

# Electrochemical Monitors



## 3000 SERIES DIN Rail

- High accuracy
- High reliability
- Modular design
- Low installation costs
- Compact size

This series of analyzers and transmitters has been designed for the measurement and control of:

- pH
- O.R.P.
- Conductivity
- Electrodeless Conductivity
- Residual Chlorine
- Temperature

for OEM applications in industrial process, with continuous readings on LCD display.

These instruments provide accurate, low cost measuring and control for industrial process, water treatment and wastewater applications.

## Accessories

### BC 95106

Frame for panel mounting of DIN Rail instrument (6 modules).



### BC 9408

Water-tight enclosure for 1 unit  
Protection: IP 65 (NEMA 4X)  
Dimensions: 205 x 220 x 140 mm

### BC 9412

Water-tight enclosure for 2 units  
Protection: IP 65 (NEMA 4X)  
Dimensions: 275 x 220 x 140 mm

### BC 9491

Wall mounting brackets for BC 9408 and BC 9412



example of installation in BC 9408 and BC 9412

## 3645 - 3655 Models

- LCD Display
- Automatic temperature compensation
- Set point values display
- HI/LO selectable limits
- Adjustable relay time delay
- 4/20 mA output
- Detachable terminal block

### PH 3645 pH controller

Scale: 0/14.00 pH  
ATC: NTC 10K

### MV 3645 O.R.P. controller

Scale: 0/1000 mV

### C 3645 E. Conductivity controller

Scale: 0/1999  $\mu$ S  
**Option 091.1321:** scale 0/199,9  $\mu$ S  
**Option 091.1322:** scale 0/19,99 mS  
**Input:** 2-electrode E.C. cell 4-electrode E.C. cell  
**ATC:** NTC 10K  
**Temperature coefficient:** 2 %/°C

### TR 3645 Temperature controller

Scale: -20/+120 °C  
**Input:** RTD Pt 100 (3 wire)

### C 3655 Electrodeless Conductivity controller

Scale: 0/199.9 mS  
**Electrodeless Cell:** type SI 315 or SI 315.1  
**Automatic temperature compensation:** Pt100 sensor  
**Temperature coefficient:** 2 %/°C  
**Option 091.1331:** scale 0/19.99 mS  
**Option 091.1333:** scale 0/1999 mS

### BC 3396 Galvanic isolator

This loop powered DC/DC converter transfers the primary 0/20 mA on the galvanically isolated secondary circuit.

**Voltage:** 15 Vdc max. (Internal loss 5 Vdc)  
**Dimensions:** 52.5 x 95 x 58 mm (3 DIN Rail modules)



## Specifications

(3645 and 3655 models)

**Display:** LCD

**Zero Adjustment:**  $\pm$  15%

**Slope Adjustment:**  $\pm$  20%

**Automatic Temperature Compensation:** NTC 10K  
(Pt100 for C 3655)

**Output:** 4/20 mA dc 300 ohm max

**Relay contacts:** SPDT 220 V 5 A resistive load

**Hysteresis:**  $\pm$  0.25%

**Switching Time:** < 0.5 s

**Relay Time Delay:** adjustable 0/40 s

**Operating Temperature:** 0/50 °C

**Operating Humidity:** 0/95% R.H. non-condensing

**Power supply:** 110/220 V  $\pm$ 10% 50/60 Hz 2 VA

**Isolation:** 4 kV (Iec 348)

**Weight:** 265 g

**Dimensions:** 105 x 95 x 90 mm (6 DIN Rail modules)

**Mounting:** DIN Rail (35 x 7.5 mm Rail)

**Option 091.402:** 24 Vac power supply

*The technical specifications could be changed without notice.*

## 3647 Models

Dual set-point

### PH 3647

PH controller

- LCD Display
- Automatic temperature compensation
- Dual set points
- Set point values display
- HI/LO selectable limits
- Adjustable relay time delay
- 4/20 mA output
- DIN Rail mounting
- Detachable terminal block

### General informations

The pH controller incorporates a large LCD display which is easily readable even from considerable distances.

The controller will display set point values by pressing a button on the front panel next to the corresponding adjustment potentiometer.

The HI/LO function may be selected for each relay.

The delay adjustment allows relay activation to be delayed from 0/40 s.

Automatic temperature compensation is achieved with use of a NTC 10K.

The 4/20 mA output is available for input into recorders or other devices requiring a 4/20 mA input signal.

Zero and sensitivity (span) calibration adjustments are located on the front panel and are easily accessible.

The controller may be powered by an external power supply 110/220 Vac.

All plastic construction provides maximum resistance to corrosion.

Detachable terminal block connectors and DIN Rail mounting provide for easy field installation.

### Accessories

See Series 3000 accessories.



### Specifications

**Display:** LCD

**Input:** pH electrode  
NTC 10 Kohm

**Output:** 4/20 mA dc 300 ohm max.

**Scale:** 0.00/14.00 pH

**Temperature Compensation:** automatic 0/80 °C  
error < ± 0.2 pH

**Zero:** adjustable ± 10 %

**Sensitivity:** adjustable from -5% to +15%

**Input Current:** < 2 pA

**Input Resistance:** > 10<sup>12</sup> ohm

**Set points:** dual

**Relays contacts:** SPST 220 Vac 5 A (resistive load)

**Hysteresis:** ± 0.4 %

**Relay Time Delay:** adjustable 0/40 s

**Operating Temperature:** 0/50 °C

**Operating Humidity:** 0/95% R.H. non-condensing

**Power Supply:** 110/220 V 50/60 Hz 3 VA

**Terminal block:** detachable

**Net Weight:** 265 g

**Dimensions:** 105 x 95 x 58 mm (6 modules)

**Mounting:** DIN Rail (35 x 7.5 mm Rail)

**Option 091.402:** 24 Vac power supply

*The technical specifications could be changed without notice.*

# Electrochemical Monitors

## MV 3647 O.R.P. controller

- LCD Display
- Dual set point
- Set point values display
- HI/LO selectable limits
- Adjustable relay time delay
- 4/20 mA output
- DIN Rail mounting
- Detachable terminal blocks

## General informations

The O.R.P. controller incorporates a large LCD display which is easily readable even from considerable distances.

The controller will display set point values by pressing a button on the front panel next to the corresponding adjustment potentiometer.

The HI/LO function may be selected for each relay.

The delay adjustment allows relay activation to be delayed from 0/40 s.

The 4/20 mA output is available for input into recorders or other devices requiring a 4/20 mA input signal.

Zero and Sensitivity (Span) calibration adjustments are located on the front panel and are easily accessible.

The controller may be powered by an external power supply 110/220 Vac.

All plastic construction provides maximum resistance to corrosion.

Detachable terminal block connectors and DIN Rail mounting provide for easy field installation.

## Accessories

See Series 3000 accessories.



## Specifications

**Display:** LCD

**Input:** O.R.P. electrode

**Output:** 4/20 mA dc 300 ohm max.

**Scale:** 0/1000 mV

**Zero:** adjustable  $\pm 10\%$

**Sensitivity:** adjustable from -5% to +15%

**Input Current:**  $< 2\text{ pA}$

**Input Resistance:**  $> 10^{12}\text{ ohm}$

**Set points:** dual

**Relays contacts:** SPST 220 Vac 5 A resistive

**Hysteresis:**  $\pm 0.4\%$

**Relay Time Delay:** adjustable 0/40 s

**Operating Temperature:** 0/50 °C

**Operating Humidity:** 0/95% R.H. non-condensing

**Power Supply:** 110/220 V 50/60 Hz 3 VA

**Terminal block:** detachable

**Net Weight:** 265 g

**Dimensions:** 105 x 95 x 58 mm (6 modules)

**Mounting:** DIN Rail (35 x 7.5 mm Rail)

**Option 091.402:** 24 Vac Power supply

*The technical specifications could be changed without notice.*

# Electrochemical Monitors

## C 3647

### Conductivity controller

- LCD Display
- Automatic temperature compensation
- Dual set points
- Set point values display
- HI/LO selectable limits
- Adjustable relay time delay
- 4/20 mA output
- DIN Rail mounting
- Detachable terminal block

### General informations

The conductivity controller incorporates a large LCD display which is easily readable even from considerable distances.

The controller will display set point values by pressing a button on the front panel next to the corresponding adjustment potentiometer.

The HI/LO function may be selected for each relay.

The delay adjustment allows relay activation to be delayed from 0/40 s.

Automatic temperature compensation is achieved with use of a NTC 10K.

The 4/20 mA output is available for input into recorders or other devices requiring a 4/20 mA input signal.

Zero and sensitivity (span) calibration adjustments are located on the front panel and are easily accessible.

The controller may be powered by an external power supply 110/220 Vac.

All plastic construction provides maximum resistance to corrosion.

Detachable terminal block connectors and DIN Rail mounting provide for easy field installation.

### Accessories

See Series 3000 accessories.



New

### Specifications

**Display:** LCD

**Input:** 2-electrodes EC cells  
4-electrodes EC cells  
NTC 10 Kohm

**Output:** 4/20 mA dc 300 ohm max.

**Scale:** 0/1999  $\mu$ S (199,9  $\mu$ S - 19,99 mS available on request)

**Temperature Compensation:** automatic 0/80 °C  
error <  $\pm$  0.2 pH

**Zero:** adjustable  $\pm$  10 %

**Sensitivity:** adjustable from -5% to +15%

**Input Current:** < 2 pA

**Input Resistance:** >  $10^{12}$  ohm

**Set points:** dual

**Relays contacts:** SPST 220 Vac 5 A (resistive load)

**Hysteresis:**  $\pm$  0.4 %

**Relay Time Delay:** adjustable 0/40 s

**Operating Temperature:** 0/50 °C

**Operating Humidity:** 0/95% R.H. non-condensing

**Power Supply:** 110/220 V 50/60 Hz 3 VA

**Terminal block:** detachable

**Net Weight:** 265 g

**Dimensions:** 105 x 95 x 58 mm (6 modules)

**Mounting:** DIN Rail (35 x 7.5 mm Rail)

**Option 091.402:** 24 Vac power supply

*The technical specifications could be changed without notice.*

# Electrochemical Monitors

## 3630 Models Two-wire transmitters

### PH 3630 pH Transmitter

### MV 3630 O.R.P. Transmitter

- Two wire 4/20 mA operation
- Isolated current loop output
- LCD display
- Automatic or manual temperature compensation (pH)
- Temperature display (pH)
- 10/30 Vdc power supply
- Direct connection to PC's
- Din Rail mounting
- Detachable terminal block

### General informations

pH and O.R.P. transmitters incorporate a large LCD display which is easily readable even from considerable distances.

Transmitters are powered by an external power supply from 10 to 30 Vdc. The same two wires which provide power to the transmitter also carry the 4/20 mA output pH signal.

Zero and Sensitivity (span) calibration adjustments are located on the front panel and are easily accessible.

The 4/20 mA output is isolated for input into recorders or other devices requiring a 4/20 mA signal.

The input/output isolation also allows input into PLC, DCS or Personal Computers accepting 4/20 mA signals.

A common power supply may be used to power other transmitters without interference from other measurement devices or sensors.

All plastic construction provides maximum resistance to corrosion. Detachable terminal block connectors and Din Rail mounting provide for easy field installation.

The PH 3630 transmitter will display temperature values of manual or automatic temperature compensation devices. Automatic Temperature Compensation is achieved with use of a 100 ohm platinum RTD.



### Specifications

**Display:** LCD

**Inputs pH 3630:** pH electrode Pt100 3 wire

**Input MV 3630:** O.R.P. electrode

**Output:** 4/20 mA dc isolated

**Scales PH 3630:** 0/14.00 pH -10.0/120.0 °C

**Scale MV 3630:** 0/1000 mV

**Temperature Compensation:** manual or automatic (PH 3630 only)

**Zero:** adjustable  $\pm 15\%$

**Sensitivity:** adjustable from 86% to 112%

**Input Current:**  $< 2 \mu\text{A}$

**Input Resistance:**  $> 10^{12} \text{ ohm}$

**Operating Temperature:** 0/50 °C

**Operating Humidity:** 0/95% R.H. non-condensing

**Power supply:** 10/30 Vdc

**Isolation:** 500 V input to output

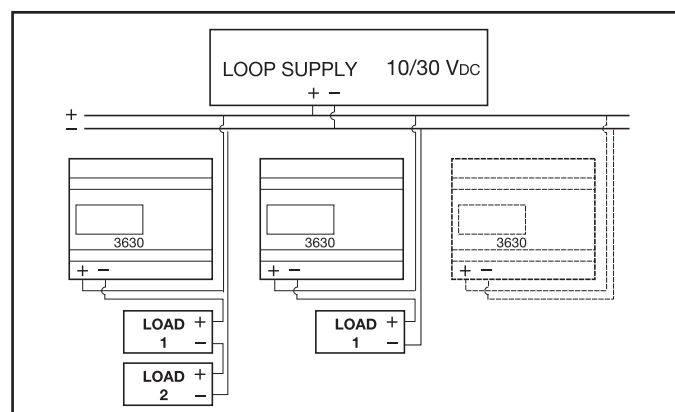
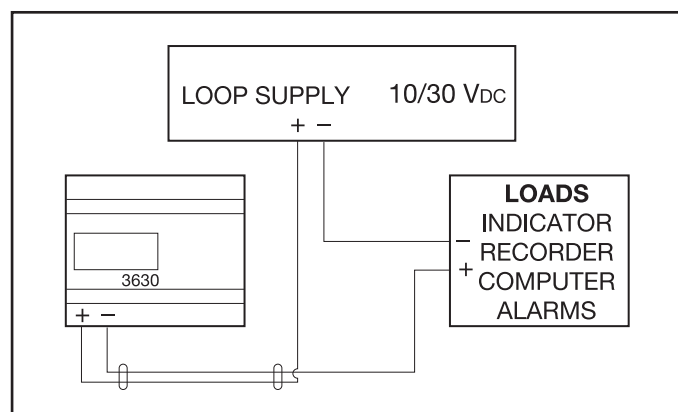
**Terminal block:** detachable

**Net Weight:** 200 g

**Dimensions:** 105 x 95 x 58 mm (6 modules)

**Mounting:** DIN Rail (35 x 7.5 mm Rail)

*The technical specifications could be changed without notice.*



# Electrochemical Monitors

## C 3630

### E. Conductivity Transmitter

- Two wire 4/20 mA operation
- Isolated current loop output
- LCD Display
- 3 selectable scales
- 2 or 4 electrodes E.C. cell inputs
- Automatic or manual temperature compensation
- Temperature display
- Frequency selectable
- Decimal point selectable
- 10/30 Vdc power supply
- Direct connection to PC's
- Din Rail mounting
- Detachable terminal block

### General informations

The conductivity transmitter incorporates a large LCD display which is easily readable even from considerable distances.

The transmitter will display temperature values of manual or automatic temperature compensation devices.

The automatic temperature compensation is achieved with use of a 100 ohm platinum RTD, with temperature coefficient display.

The transmitter is powered by an external power supply from 10 to 30 Vdc. The same two wires which provide power to the transmitter also carry the 4/20 mA output conductivity signal.

Zero and sensitivity (span) calibration adjustments are located on the front panel and are easily accessible.

The 4/20 mA output is isolated for input into recorders or other devices requiring a 4/20 mA input signal.

The input/output isolation also allows input into Personal Computers accepting 4/20 mA inputs.

A common power supply may be used to power other transmitters without interference from other measurement devices or sensors.

All plastic construction provides maximum resistance to corrosion.

Detachable terminal block connectors and Din Rail mounting provide for easy field installation.



### Specifications

**Display:** LCD

**Inputs:** 2-electrodes E.C. cell 4-electrodes E.C. cell  
RTD Pt 100 2 or 3 wire

**Output:** 4/20 mA isolated

**Scales:** 0/199.9 µS 0/1,999 µS 0/19.99 mS -10.0/120.0 °C

**Temperature Compensation:** manual or automatic

**Temperature Compensation Coefficient:** 0/4.0 %/°C adjustable

**Temperature Compensation Reference:** 20 °C

**Zero:** adjustable ±15%

**Sensitivity:** adjustable from 86% to 112% narrow range  
adjustable 0/160% wide range

**Operating Temperature:** 0/50 °C

**Operating Humidity:** 0/95% R.H. non-condensing

**Power supply:** 10/30 Vdc

**Isolation:** 500 V input to output

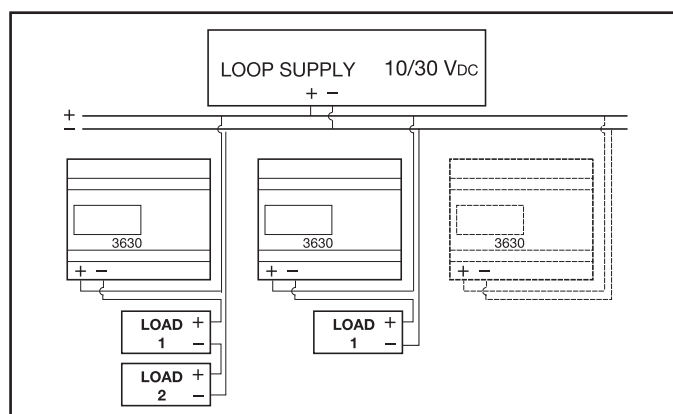
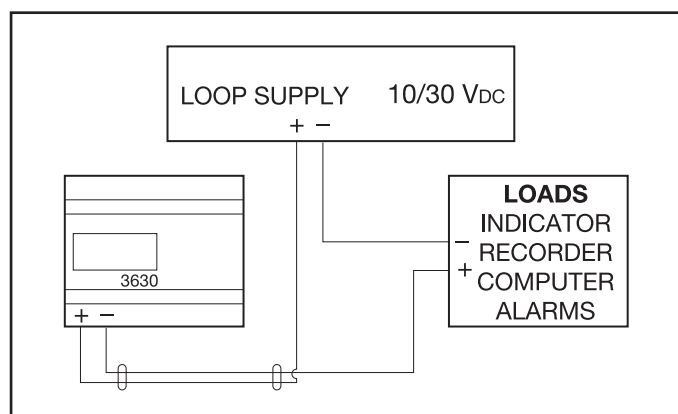
**Terminal block:** detachable

**Net Weight:** 200 g

**Dimensions:** 105 x 95 x 58 mm (6 modules)

**Mounting:** DIN Rail (35 x 7.5 mm Rail)

*The technical specifications could be changed without notice.*





# Electrochemical Monitors

## CL 3630

### Chlorine - D.Ozone 4/20 mA Transmitter

- Two wire 4/20 mA operation
- Isolated current loop output
- Potentiostatic, polarographic and galvanic sensors input
- LCD display
- Temperature and TC display
- Automatic or manual temperature compensation
- 10/30 Vdc power supply
- Direct connection to PC's
- Din Rail mounting
- Detachable terminal blocks

The transmitters incorporate a large LCD display which is easily readable even from considerable distances.

Transmitters are powered by an external power supply from 10 to 30 Vdc. The same two wires which provide power to the transmitter also carry the 4/20 mA output signal.

The 4/20 mA output is isolated from the input. The isolation allows the connection to PLC, DCS or Personal Computers accepting 4/20 mA signals.

The transmitter will display temperature and the temperature coefficient values of manual/automatic temperature compensation. The automatic temperature compensation is achieved with the use of a Pt100.

Detachable terminal block and Din Rail mounting enclosure provide for easy field installation.

## Accessories

**Potentiostatic sensor:** SZ 283.

### Flow cells:

- SZ 7231 for Cl<sub>2</sub>/O<sub>3</sub> sensor
- SZ 7233 for pH, ORP and Cl<sub>2</sub>/O<sub>3</sub> sensors
- SZ 7251 auto clean cell for Cl<sub>2</sub>/O<sub>3</sub> sensor

### Polarographic sensors:

- CL 7901 Free Chlorine sensor, flow cell and spares
- OZ 7901 Dissolved Ozone sensor, flow cell and spares

**Galvanic sensors:** Please ask our sales department



## Specifications

**Display:** LCD

**Inputs:** potentiostatic sensor 3 wires  
polarographic sensor 2 wires  
galvanic sensor 2 wires  
Pt100

**Polarization:** -200 mV adjustable +/- 800 mV on request

**Scales:** 0/1.999 - 0/19.99 - 0/199.9 - 0/1999 selectable  
-10.0/120.0°C

**Slope:** 0.4 - 4 - 40 µA of the selected scale

**Temperature compensation:** manual and automatic

**Temperature coefficient:** 0/4.0 %/°C  
(2%/°C for Chlorine e 2.5%/°C for Ozone)

**Reference temperature:** 20°C

**Zero:** adjustable +/- 15 %

**Sensitivity:** adjustable 86/112 % (coarse 20/200 %)

**Output:** 4/20 mA isolated

**Operating temperature:** 0/50°C

**Operating humidity:** 95% without condensate

**Power:** 10/30 Vdc

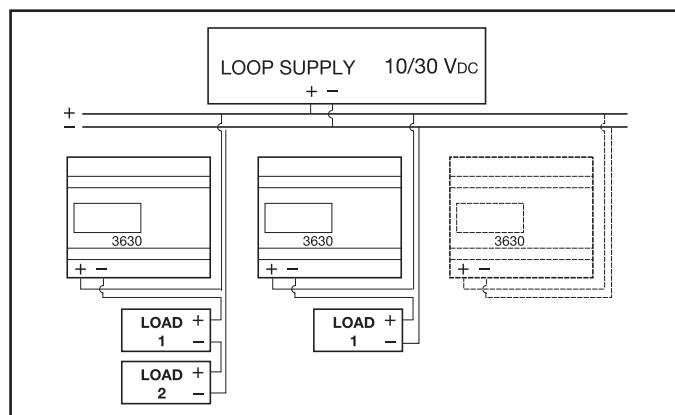
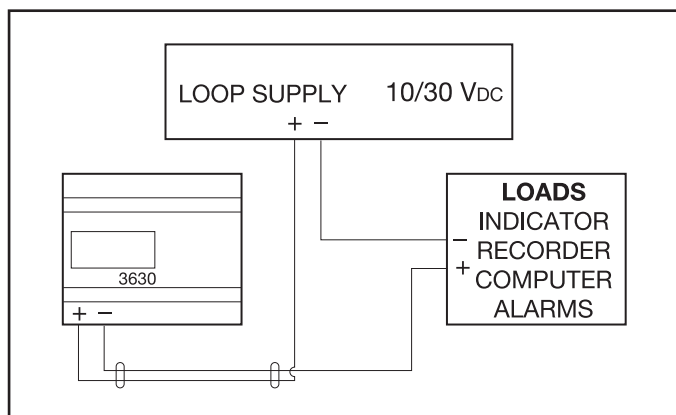
**Isolation:** 500 V from input to output

**Weight:** 200 g

**Dimensions:** 105 x 95 x 58 mm

**Mounting:** DIN rail (6 modules)

*The technical specifications could be changed without notice.*



## SUBMERSIBLE PROBES

pH - ORP - Dissolved Oxygen



*examples of immersion probes*

The probes include the sensors.  
They have an adjustable collar for the immersion depth.  
SZ 740 junction box and SZ 901 autoclean fitting may be installed on the probes.

- SI 161**  
pH probe with electrode type SZ 165. Length 720 mm.
- SI 181**  
pH probe with electrode type SZ 165. Length 1170 mm.
- SI 262**  
ORP probe with electrode type SZ 265 (Gold/Ref.). Length 720 mm.
- SI 263**  
ORP probe with electrode type SZ 275 (Platinum/Ref.). Length 720 mm.
- SI 683**  
D.Oxygen probe with polarographic sensor type SZ 654.1. Length 1170 mm.

### Specifications

**Body:** PVC  
**Diameter:** 34 mm.  
**Depth:** adjustable  
**Operating temperature:** 40 °C max.  
**Options:** special materials and length

## Submersible probes with microtransmitter

pH - ORP - D.Oxygen

The probes include the sensor and microtransmitter.  
They have an adjustable collar for the immersion depth.  
SZ 901 autoclean fitting may be installed on the probes.

- ST 161.1**  
pH probe with electrode type SZ 171 and microtransmitter 080102.1. Length 750 mm.
- ST 181.1**  
pH probe with electrode type SZ 171 and microtransmitter 080102.1. Length 1200 mm.
- ST 262.1**  
ORP probe with electrode type SZ 265 (Gold/Ref.) and microtransmitter 080102.1. Length 750 mm.
- ST 282.1**  
ORP probe with electrode type SZ 265 (Gold/Ref.) and microtransmitter 080102.1. Length 1200 mm.
- ST 263.1**  
ORP probe with electrode type SZ 275 (Platinum/Ref.) and microtransmitter 080102.1. Length 750 mm.
- ST 283.1**  
ORP probe with electrode type SZ 275 (Platinum/Ref.) and microtransmitter 080102.1. Length 1200 mm.
- ST 683**  
D.Oxygen probe with polarographic sensor type SZ 654.1 and microtransmitter 080610.2. Length 1200 mm.

### Specifications

**Body:** PVC  
**Diameter:** 34 mm.  
**Depth:** adjustable  
**Operating Temperature:** 40 °C max.  
**Options:** special materials and length

### Accessories

- SZ 901** Fitting for chemical autocleaning  
**SZ 740** Junction box for probes type SI  
**SZ 911** Stopper for SZ 740 and microtransmitters (used when not installed on the top of the probe)



## E. Conductivity probes Two electrodes



### SI 301

In-line E. Conductivity probe

**Applications:** from 0 to 2 mS

**Cell constant:** K=1 cm<sup>-1</sup>

**Body:** PVC

**2 Electrodes:** 316 S.Steel

**Thread:** 1" BSP

**Operating temperature:** 40 °C max.

**Operating pressure:** 3 bar max. at 25 °C

**Option:** non standard materials and cell constant.

### SI 3013

In-line E. Conductivity probe

**Applications:** from 0 to 2 mS

**Cell constant:** K=1 cm<sup>-1</sup>

**Body:** Polypropilene

**2 Electrodes:** 316 S.Steel

**Thread:** 1" BSP

**Operating temperature:** 50 °C max.

**Operating pressure:** 3 bar max. at 25 °C

**Option:** non standard materials and cell constant.



### SI 308T

In-line E. Conductivity probe + Pt100

**Applications:** for high purity water.

**Cell constant:** K=0.01 cm<sup>-1</sup>

**Body:** PVC

**Electrodes:** 316 S.Steel

**Temperature sensor:** Pt100

**Thread:** 1" BSP

**Operating temperature:** 50 °C max.

**Operating pressure:** 3 bar max. at 25 °C

**Cable:** 3 mt

## Special E. Conductivity probes Two electrodes



**SZ 3320.1**  
**SZ 3330.1**



**SAN 621**



**SZ 3300.1**

### SZ 3320.1 - SZ 3330.1

For high Temperature/Pressure.

**Applications:** High purity water.

**Cell constant SZ 3320.1:** K = 0.1 cm<sup>-1</sup>

**Cell constant SZ 3330.1:** K = 1 cm<sup>-1</sup>

**Thermocompensator:** Pt100

**Material in contact with liquids:** S. Steel, PEEK L=55 mm

**Temperature:** 205 °C max.

**Pressure:** 16 bar max. at 25 °C

**Connector:** 4-pin

**Thread:** 3/4" NPT

### SAN 621-3-1-5S

Pressurizable/Sterilizabile.

**Applications:** High purity water, pharmaceutical industry.

**Cell constant:** K = 0.1 cm<sup>-1</sup>

**Thermocompensator:** Pt100

**Material in contact with liquids:** S. Steel, PEEK L=55 mm

**Temperature:** 121 °C max.

**Pressure:** 6 bar (10 bar at 20 °C).

**Connector:** 4-pin

**Fixing:** Tri-Clamp 2"

### SZ 3300.1

Graphite Electrodes.

**Applications:** From 200 µS to 200 mS.

**Cell constant:** K = 1 cm<sup>-1</sup>

**Thermocompensator:** Pt100

**Material in contact with liquids:** PES-graphite L=55 mm

**Temperature:** 150 °C max. at 10 bar

**Pressure:** 16 bar at 20 °C.

**Connector:** 4-pin

**Thread:** 3/4" NPT

## E. Conductivity probes

Four electrodes



### SI 311

4-Electrode E. Conductivity probe + Pt100

**Applications:** for immersion and in-line applications.  
Suitable for microtransmitter type 080310.

**Cell constant:**  $K=1 \text{ cm}^{-1}$

**Body:** Polypropylene

**Electrodes:** 316 S.Steel

**Temperature sensor:** Pt100

**Thread:** 1" BSP

**Operating temperature:** 80 °C max.

**Operating pressure:** 3 bar max. at 25 °C

**Cable:** 3 m



**New**

### SZ 312.1 - SZ 312.4

4-Electrode E. Conductivity probe + Temperature compensator

**Applications:** for immersion and in-line applications.  
Suitable for C 3645.

**Cell constant:**  $K=0.7 \text{ cm}^{-1}$

**Body:** PVDF

**Electrodes:** 316 S.Steel

**Temperature sensor SZ 312.1:** Pt100

**Temperature sensor SZ 312.4:** NTC 10K

**Thread:** 1/2" BSP on the top of the sensor

**Operating temperature:** 80 °C max.

**Operating pressure:** 3 bar max. at 25 °C

**Cable:** 3 m

## E. Conductivity probes

Four electrodes with microtransmitter



### ST 311

4-Electrode Conductivity probe with microtransmitter 080310.

For in-line and immersion applications.

This probe is an assembling of SI 311 + 080310 microtransmitter, suitable for C 7685 or C 565.2 controllers.

Connection by cables + connector type SZ 9481 (10 m) or SZ 9483 (30 m).

**Measuring range:** 0/2000 mS

**Operating temperature:** 80 °C max. (body)

40 °C max. (microtransmitter)

**Length:** 210 mm (other as requested)



### ST 31011

4-Electrode Conductivity probe with microtransmitter 080310.

For in-line and immersion applications.

Suitable for C 7685 or C 565.2 controllers connected by SZ 9481 (10 m) or SZ 9483 (30 m) cables + connector.

**Measuring range:** 0/2000 mS

**Body:** PVDF

**Operating temperature:** 100 °C max. (body)

40 °C max. (microtransmitter)

**Length:** 210 mm (other as requested)

**Fixing:** DN 25 tapered collar

## Accessories

**SZ 9481** 10 m cable with connector 2231520

**SZ 9483** 30 m cable with connector 2231520

## Toroidal E. Conductivity Probes



### SI 315

Electrodeless Conductivity probe + Pt100

In-line and immersion applications.

Suitable for microtransmitter 080315 and C 3655 controller.

**Applications:** from 2000  $\mu\text{S}$  to 20 S, food, chemical, galvanic industry

**Body:** PVDF in contact with the liquid

**Temperature sensor:** Pt100 built-in

**Operating temperature:** 80 °C max

**Operating pressure:** 3 bar max. at 25 °C

**Length:** 200 mm

**Diameter:** 34 mm

**Cable:** 3 m

**Fixing:** by fitting SZ 724

**Option:** non standard length



### SI 315.1

Electrodeless Conductivity probe + Pt100

In-line and immersion applications.

Suitable for microtransmitter 080315 and C 3655 controller.

**Applications:** from 2000  $\mu\text{S}$  to 20 S, food, chemical, galvanic industry

**Body:** PVDF in contact with the liquid

**Temperature sensor:** Pt100 built-in

**Operating temperature:** 80 °C max

**Operating pressure:** 3 bar max. at 25 °C

**Length:** 200 mm

**Diameter:** 34 mm

**Cable:** 3 m

**Fixing:** DIN 32 tapered collar for DIN 11851-52

**Option:** non standard length

## Toroidal E. Conductivity Probes with microtransmitter



### ST 315

Electrodeless Conductivity probe with microtransmitter 080315.

For in-line and immersion applications.

This probe is an assembling of SI 315 + 080315 microtransmitter,

suitable for C 7685 or C 565.2 controllers.

Connection by cables + connector type SZ 9481 (10 m) or SZ 9483 (30 m).

**Applications:** from 2000  $\mu\text{S}$  to 20 S, food, chemical, galvanic industry

**Cell constant:**  $K = 1 \text{ cm}^{-1}$

**Body:** PVDF in contact with the liquid

**Temperature sensor:** Pt100 built-in

**Operating temperature:** 80 °C max at 1 bar

**Operating pressure:** 3.5 bar max. at 25 °C

**Length:** 255 mm

**Diameter:** 34 mm

**Fixing ST315:** by fitting SZ 724

**Option:** non standard length

## Accessories

**SZ 9481** 10 m cable with connector 2231520

**SZ 9483** 30 m cable with connector 2231520

**2231520** IP 67 connector for cable

**2423407** 7 wires cable



**SZ 724** Fittings for DN40 fixing.

To be used with SI 315 and ST 315

## ST 315.21 Toroidal submersible probe



### Principle of operation

When the electrodeless conductivity sensor is immersed in the solution to be measured, a conductive loop is created through the two toroidally wound coils. An alternating current is applied to one of the coils which induces a current in the conductive loop. The second coil is used to measure the conductivity which is proportional to the induced current in the solution. The advantages of the electrodeless method are more apparent in measurement applications in which electrodes contamination and polarization of a conventional conductivity system can lead to erroneous readings.

### Probe assembly

The submersible probe is a 5 part assembly:

- a sensing toroidal element with a built-in temperature sensor
- a mounting adapter screwed to the back of the sensing element. The back end is FNPT threaded for 1" pipe mounting.
- a mounting adapter screwed to the bottom of the microtransmitter. The back end is FNPT threaded for 1" pipe mounting.
- a microtransmitter type 080315
- an extension pipe threaded two ends MNPT, not included in the package

This probe is compatible with C 7685 and C 565.2 B&C Electronics controllers.

### Specifications

**Installation:** submersible

**Microtransmitter:** model 080315 (PVC housing)

**Cell:** toroidal

**Temperature sensor:** Pt100

**Materials:** PVC

**Extension:** 3 m max

**Max. Temperature:** 40 °C part in contact with liquid

**Temperature coeff.:** TC of the liquid + 0.3 %/°C

**Max. Pressure:** 3 Atm. at 25 °C

**Cable length:** 3.5 m

**Protection:** IP68

### Accessories

**SZ 9481** 10 m cable with connector 2231520

**SZ 9483** 30 m cable with connector 2231520

**2231520** IP67 connector for cable

## Toroidal E. Conductivity Loop powered transmitters



**ST 3254.1** 0/10 mS range

**ST 3254.2** 0/100 mS range

**ST 3254.3** 0/1000 mS range

**ST 3214.5** 0/200 mS range

On request it is available a model with range 0/4 mS

This E. Conductivity probe consists of a loop powered transmitter and an electrodeless conductivity sensor in a single package. Temperature compensation is accomplished with a built-in sensor. Applications include water treatment, cooling tower and water monitoring. Four models are available for specific measuring range.

### Principle of operation

When the electrodeless conductivity sensor is immersed in the sample to be measured, a conductive loop is created through the two toroidally wound coils. An alternating current is applied to one of the coils which induces a current in the conductive loop. The second coil is used to measure the conductivity which is proportional to the induced current in the solution. The advantages of the electrodeless method are more apparent in measurement applications in which electrodes contamination and polarization of a conventional conductivity system can lead to erroneous readings.

Each probe contains:

- two measuring toroidal coils
- temperature sensor
- 4/20 current loop amplifier

### Specifications

**Measuring method:** toroidal

**Power supply:** 11/30 Vdc

**Temperature sensor:** built-in

**Load:** 600 ohm max. at 24 Vdc

**Max. temperature:** 50 °C part in contact with liquid

**Temperature Coefficient:** 2.2 %/°C (2.0 for ST 3214.5)

**Temperature Reference:** 25 °C (20 °C for ST 3214.5)

**Max. Pressure:** 10 bar at 25 °C

**Length:** 207 mm

**Thread:** 1 1/2" MNPT (both sides)

**Body:** PVC-C

**Cable length:** 3 m **Installation:** in-line or submersible

## ST 6115

Optical dissolved oxygen  
2-wire 4/20 mA transmitter



This unique submersible probe has been designed to measure dissolved oxygen based on fluorescent technology.

The measuring system consists of:

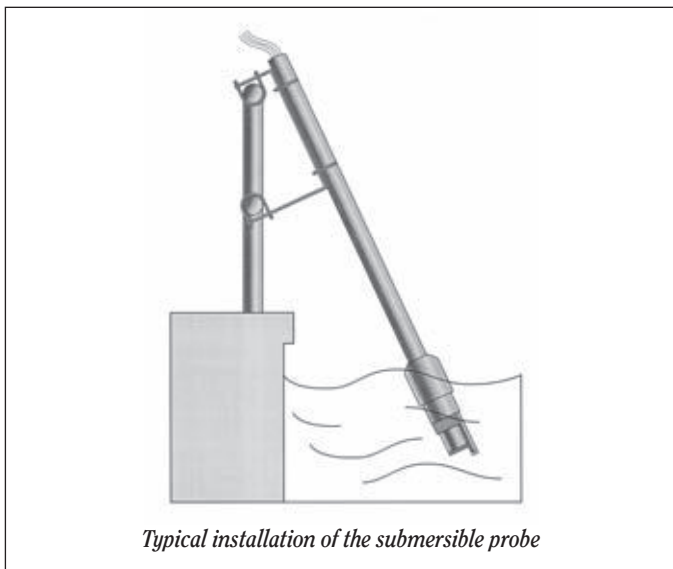
- optical device complete with a layer of fluorescent material,
- electronic circuit with an exciting beam for the fluorescence detection,
- built-in 2-wire 4/20 mA transmitter;
- digital input for calibration and configuration
- nozzle for the autoclean by external pressure air

The automatic temperature compensation is done internally by means of a built-in sensor.

Thanks to its 4/20 mA isolated output, the probe can be directly connected to a PLC or data logger, without using amplifiers or other devices.

The probe can be connected to B&C Electronics controller BC7635 and BC7335, which provides the power to the probe, the measuring readout, 2 set-points and an alarm, the hold during the cleaning cycle.

The most common applications of this probe include: water quality monitoring, municipal and industrial water treatment and aquaculture.



Typical installation of the submersible probe

## Specifications

**Measuring method:** optical

**Scale:** 0-20 ppm

**Sensitivity:** +/- 0,5 % of the scale

**Response time:** 95% in < 60 seconds

**Power supply:** 9/36 Vdc

**Isolated output:** 4/20 mA current Loop

**Load:** 600  $\Omega$  max. at 24 Vdc

**Temperature compensation:** automatic

**Room temperature:** -5/50  $^{\circ}\text{C}$

**Max. pressure:** 10 Bar at 25  $^{\circ}\text{C}$

**Length:** 165 mm total

**Diameter:** 60 mm

**Body:** PVC

**Cable:** 10 m (100 m max.)

**Installation:** submersible

**Autoclean:** by pressure air 3 bar max

**Protection:** IP 68

**Sensing element life:**

> 1 year, protected from light replaceable by customer

*The technical specifications could be changed without notice.*

## Principle of operation

A light beam of a specific wavelength is sent to a special fluorescent layer in contact with the sample.

The absorbed light energy is partially released as a light pulse with an higher wavelength.

This phenomena is called fluorescence.

If oxygen molecules are in contact with the sensing layer, the fluorescing is reduced (quenching).

By measuring the amount of quenching it is possible to determine the oxygen concentration.

The advantages of this measuring method are the absence of electrolyte and membrane, the possibility to measure the oxygen concentration in water or in air, and a good sensitivity in a low oxygen concentration.

## Temperature probes Industrial



**SI 520**

**SI 520**

In-line Temperature probe.  
**Sensor:** RTD Pt100 DIN 0.5  
**Body:** 316 S.Steel  
**Length:** rod 150 mm  
**Diameter:** 8 mm  
**Fixing:** 1/2" BSP

**SI 540**

Immersion Temperature probe.  
**Sensor:** RTD Pt100 DIN 0.5  
**Body:** 316 S.Steel  
**Length:** rod 500 mm  
**Diameter:** 6 mm



**SI 540**

## Temperature probes Portable



**SP 51501 - SP 510**

**SP 510**

Temperature probes for portable meters.  
**Sensor:** RTD Pt100 DIN 0.5  
**Body:** 316 S.Steel  
**Length:** 100 mm  
**Diameter:** 5 mm  
**Cable:** 1.5 m with jack connector

**SP 514**

Temperature probes for portable meters.  
**Sensor:** RTD Pt100 DIN 0.5  
**Body:** 316 S.Steel  
**Length:** 100 mm  
**Diameter:** 5 mm  
**Cable:** 5 m

**SP 51501**

Temperature probe for portable meters.  
**Sensor:** RTD Pt1000 DIN 0.5  
**Body:** 316 S.Steel  
**Length:** 100 mm  
**Diameter:** 5 mm  
**Cable:** 1.5 m with jack connector

**SP 51511**

Temperature probes for laboratory/portable meters.  
**Sensor:** RTD Pt1000 DIN 0.5  
**Body:** epoxy  
**Length:** 110 mm  
**Cable:** 1.5 m with jack connector



**SP 51511**





Ask for special electrodes not included in the following list.

## Epoxy pH electrodes



**SZ 142** pH electrode Glass/Ref. combination, epoxy body, Gel sealed, cable 1.5 m with BNC.

**Applications:** clean water, portable instruments, swimming-pools.

**SZ 145** pH electrode Glass/Ref. combination, epoxy body, Gel sealed, cable 9 m.

**Applications:** clean water at room temperature, industrial instruments. In-line up to 7 bar.

**SZ 1021** pH electrode, Glass/Ref. combination, sealed Gel, epoxy body. Low cost (10 pcs minimum order), cable 1 m with BNC.

**Applications:** portable instruments.

**SZ 1025** pH electrode, Glass/Ref. combination, sealed Gel, epoxy body. Low cost (10 pcs minimum order), cable 9 m.

**Applications:** clean water at room temperature, industrial instruments. In-line up to 7 bar.



**SZ 151** pH electrode glass/Ref. double junction combination, epoxy body for high temperature applications, cable 1.5 m with BNC.

**Applications:** very contaminated liquids or high temperature.



**SZ 1075** Antimony pH electrode, combination, epoxy body, cable 9 m.

**Applications:** liquids with HF contents.

**It requires a special input pHmeter.**

## Glass pH electrodes



**SZ 160** pH Electrode Glass/Ref combination, glass body, anular junction, S7 connector.

**Applications:** contaminated liquids, portable instruments, laboratory.



**SZ 161** pH Electrode Glass/Ref combination, glass body, anular junction, cable 1.5 m with BNC.

**Applications:** contaminated liquids, portable instruments, laboratory. In line up to 10 bar.

**SZ 165** pH Electrode Glass/Ref combination, glass body, anular junction, cable 9 m.

**Applications:** general purpose, industrial meters, in line up to 10 bar.



**SZ 171** Same as SZ 173. Cable 1.5 m with BNC.

**Applications:** contaminated liquids, amplified probes, portable instruments.

**SZ 173** pH Electrode Glass/Ref combination, glass body, double anular junction, cable 9 m.

**Applications:** contaminated liquids, amplified probes, industrial and heavy applications. In line up to 10 bar.



**SZ 195.1** pH Electrode Glass/Ref combination, glass body, dome bulb, low alkaline error, double anular junction, high temperature gel, cable 9 m.

**Applications:** contaminated and high temperature liquids, industrial and heavy applications. In line up to 10 bar.



**SZ 1031** pH electrode, Glass/Ref. combination refillable, glass body, cable 1.5 m with BNC.

**Applications:** very contaminated liquids, portable instruments, laboratory.

# Probes - Sensors



**SZ 1131** Puncture tip pH electrode, epoxy body, PTFE junction. 1 m cable with BNC.

**Applications:** green houses, agriculture.



**SZ 1093** Hydroponic pH electrode, epoxy body L=75 mm, cable 3 m with BNC.

**Applications:** green houses, agriculture. In-line up to 7 bar.

## Specifications

Type	Membrane	R. Mohm at 25 °C	Range pH	Temperature °C	Length mm	Diameter mm	Reference
SZ 142	GX 2	50	0 / 13	0 / 60	110	12	Ag/AgCl
SZ 145	GX 2	50	0 / 13	0 / 60	110	12	Ag/AgCl
SZ 1021	GX 2	50	0 / 13	0 / 60	110	12	Ag/AgCl
SZ 1025	GX 2	50	0 / 13	0 / 60	110	12	Ag/AgCl
SZ 151	GX 2	100	0 / 13	-5 / 130	110	12	Ag/AgCl and KNO3
SZ 160	GX 2	50	0 / 13	0 / 100	110	12	Ag/AgCl
SZ 161	GX 2	50	0 / 13	0 / 100	110	12	Ag/AgCl
SZ 165	GX 2	50	0 / 13	0 / 100	110	12	Ag/AgCl
SZ 171	GX 2	50	0 / 13	0 / 100	110	12	Ag/AgCl and KNO3
SZ 173	GX 2	50	0 / 13	0 / 100	110	12	Ag/AgCl and KNO3
SZ 195.1	GX3 dome	200	0 / 14	-5 / 130	110	12	Ag/AgCl and KNO3
SZ 1031	GX2	50	0 / 13	0 / 80	110	12	Ag/AgCl
SZ 1075	Antimonium	-	2 / 11	-5 / 100	110	12	Ag/AgCl
SZ 1093	GX2	50	0 / 13	0 / 80	75	12	Ag/AgCl
SZ 1131	GX1	300	0 / 12	-5 / 100	110	9.5	Ag/AgCl

## pH autoclean flat electrodes

This is a new and more rugged flat electrodes generation.

They may be used in immersion or in-line for an autoclean effect by the liquid flow.

The reference electrode is a double junction in order to ensure a long life even in liquid containing Ammonia, Chlorine, Cyanide, Sulfide and other contaminating ions.

The body is in PVDF, corrosion resistant and food compatible.

The special shape protects mechanically the sensing parts.

### SZ 1140

pH electrode, PTFE double junction, polymeric gel.

**Range:** 0/12 pH

**Temperature:** 0/100 °C

**Pressure:** 10 bar

**Body:** in PVDF, DL connector, 3/4" NPT thread

**Length:** 140 mm (45 mm in immersion)

**Cable:** SZ 947, L=8 m (not included)



### SZ 1150

pH electrode, PTFE double junction, polymeric gel, built-in Pt100.

**Range:** 0/12 pH

**Temperature:** 0/100 °C

**Pressure:** 10 bar

**Body:** in PVDF, Military 4-pin connector, 3/4" NPT thread

**Length:** 140 mm (45 mm in immersion)

**Cable SZ 9441:** 10 m + connector (to be order separately)



**SZ 9441**



**SZ 1150**

## ORP autoclean flat electrodes

### SZ 2060

ORP electrode, PTFE double junction, polymeric gel.

**Electrode:** Platinum disk

**Temperature:** 0/100 °C

**Pressure:** 10 bar

**Body:** in PVDF, DL connector, 3/4" NPT thread

**Length:** 140 mm (45 mm in immersion)

**Cable:** SZ 947, L=8 m (not included)



## Epoxy O.R.P. electrodes



**SZ 240** Gold/Reference combination electrode. Sealed Gel, epoxy body, S7 connector.

**Applications:** clean water, portable instruments, laboratory.

**SZ 250** Platinum/Reference combination electrode. Sealed Gel, epoxy body, S7 connector.

**Applications:** clean water, portable instruments, laboratory.



**SZ 245** Gold/Reference combination electrode. Sealed Gel, epoxy body, cable 9 m.

**Applications:** clean water, swimming pools, industrial instruments. In-line up to 7 bar.



**SZ 2011** Platinum wire/Reference combination electrode. Sealed Gel, epoxy body, cable 1.5 m with BNC connector. O.E.M. low cost version. (10 pcs. minimum order)

**Applications:** Swimming pools, portable and industrial instruments. In-line up to 7 bar.



**SZ 2055** Platinum/Reference combination electrode. Sealed Gel, epoxy body, double junction, cable 9 m.

O.E.M. low cost version. (10 pcs. minimum order)

**Applications:** liquid with HF contents, high temperature, industrial instruments. In-line up to 10 bar.



**SZ 251** Platinum/Reference combination electrode. Sealed Gel, epoxy body, cable 1.5 m with BNC connector.

**Applications:** clean water, swimming pools, portable instruments, laboratory. In-line up to 7 bar.

**SZ 255** Platinum/Reference combination electrode. Sealed Gel, epoxy body, cable 9 m.

**Applications:** clean water, swimming pools, industrial instruments. In-line up to 7 bar.

**SZ 2035** ORP electrode Band-Platinum/Ref. combination, epoxy body, Gel sealed, cable 9 m. Low cost (10 pcs minimum order).

**Applications:** clean water, industrial instruments. In-line up to 7 bar.

## Glass O.R.P. electrodes



**SZ 265** Gold/Reference combination electrode. Sealed Gel, glass body, cable 9 m.

**Applications:** cyanide treatment, industrial instruments. In-line up to 10 bar.



**SZ 275** Platinum/Reference combination electrode. Sealed Gel, glass body, cable 9 m.

**Applications:** general purpose, chromate treatment, swimming pools, industrial instruments. In-line up to 10 bar.

### Specifications

Type	Metal	Temperature °C	Length mm	Diameter mm	Reference
SZ 240	Gold	0 / 60	110	12	Ag/AgCl
SZ 245	Gold	0 / 60	110	12	Ag/AgCl
SZ 250	Platinum	0 / 60	110	12	Ag/AgCl
SZ 251	Platinum	0 / 60	110	12	Ag/AgCl
SZ 255	Platinum	0 / 60	110	12	Ag/AgCl
SZ 2035	Platinum	0 / 60	110	12	Ag/AgCl
SZ 265	Gold	-5 / 110	110	12	Ag/AgCl
SZ 275	Platinum	-5 / 110	110	12	Ag/AgCl
SZ 2011	Platinum	0 / 60	110	12	Ag/AgCl
SZ 2055	Platinum	-5 / 130	110	12	Ag/AgCl + KNO3

## E. Conductivity cells



**SZ 3252** Three black Platinum band electrodes, K=1 cm-1, epoxy body, cable 1.5 m with BNC connector.

**Applications:** portable instruments, laboratory.



**SZ 3271** Two graphite electrodes, K=1 cm-1, epoxy body L=110 mm D=12 mm, cable 1.5 m with BNC connector.

**Applications:** In-line up to 10 bar and 80 °C, range 0/80 mS.

**SZ 3273.1** Two graphite electrodes, K=1 cm-1, built-in Pt100, epoxy body L=110 mm D=12 mm, cable 3 m.

**Applications:** in-line up to 10 bar and 80 °C, range 0/80 mS.

**SZ 3273.4** Two graphite electrodes, K=1 cm-1, built-in NTC 10K, epoxy body L=110 mm D=12 mm, cable 3 m.

**Applications:** in-line up to 10 bar and 80 °C, range 0/80 mS.

## Dissolved Oxygen cells



**SZ 654.1** Polarographic D.O. cell with built-in Pt100. 250 nA, current in air at 20 °C, temperature 0/45 °C. Epoxy body L=110 mm, D=12 mm, cable 5 m. Ship with spare membrane and electrolyte.

**Applications:** immersion and in-line, water treatment, industrial instruments.

SZ 659.R1 spare membrane/electrolyte.

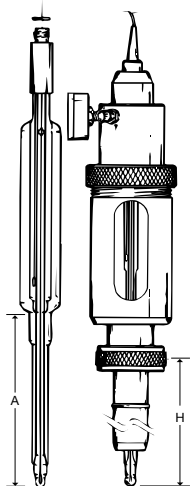


**SZ 664.2** Polarographic D.O. cell with built-in Pt1000. 250 nA, current in air at 20 °C, temperature 0/60 °C. Epoxy body L=125 mm, D=21.5 mm, cable 5 m with BNC/Jack connectors. Ship with spare membrane and electrolyte.

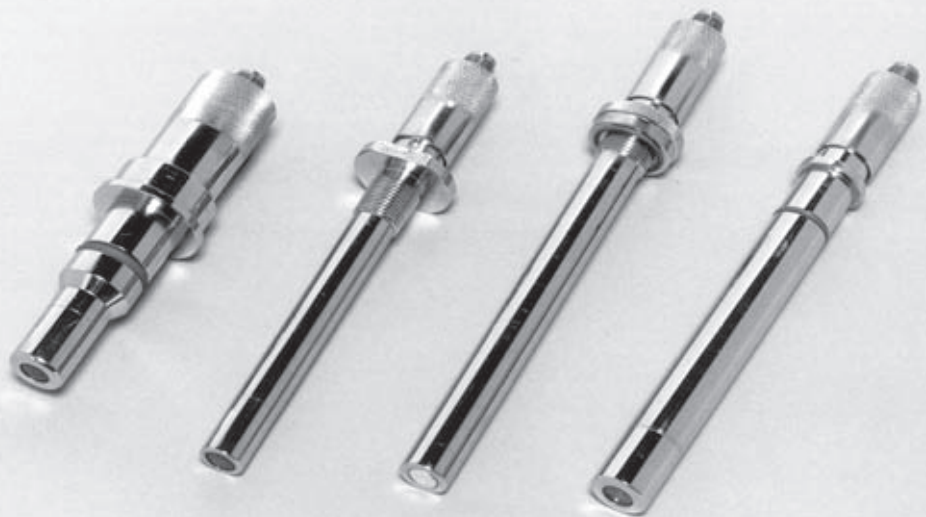
**Applications:** submersible, portable instruments in water treatment.

SZ 669.R1 spare membrane/electrolyte.

## Pressurizable and sterilizable probes



## pH/ORP electrodes - D.O./CO<sub>2</sub> cells - Sterilizable for Biotechnology



ask for the specific catalog

## Ion Selective Electrodes

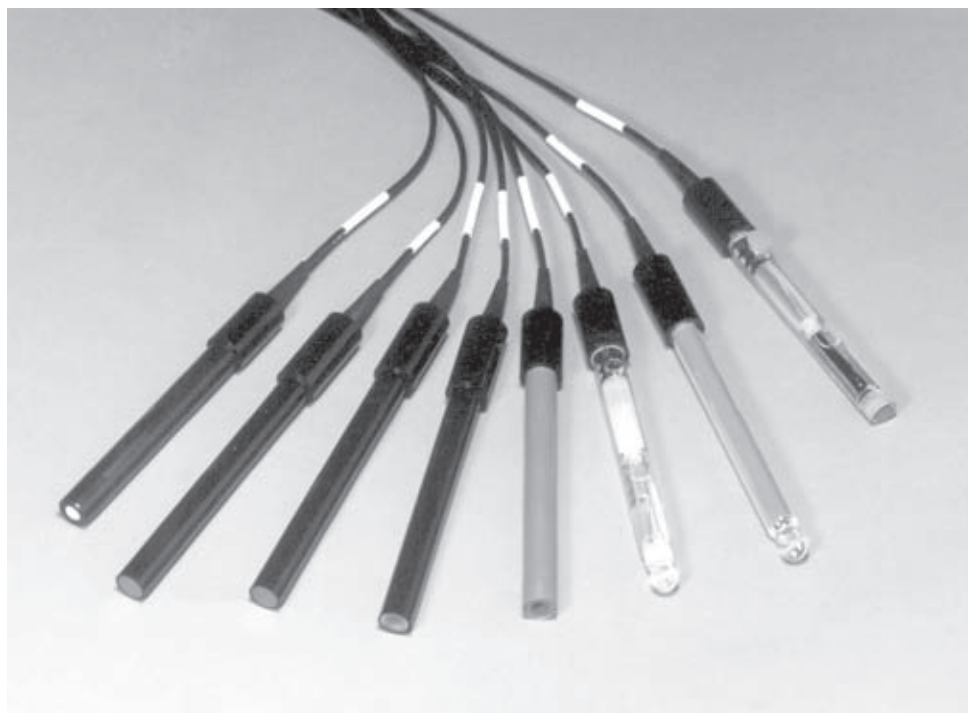
B&C Electronics offers a wide range of Ion Selective Electrodes including:

1. Polymer Membrane Electrodes
2. Solid State Electrodes
3. Gas Sensing Electrodes
4. Glass Membrane Electrodes

Ion Selective Electrodes are available as half-cells (mono) or as glass or epoxy combination electrodes.

Measurements with half-cell electrodes require the use of an additional reference electrode.

Ask our sales department in order to select the suitable ISE for continuous operation with our IC 7685 - IC 7685.010 Ion Concentration Controls.



Electrode	P/N	Director Measurement Range		Slope mV/decade at 25°C	pH range	Temperature range °C		Response time sec.	Interferences (95% in 1x10 <sup>-2</sup> M)
		Molar	PPM			continuous	not continuous		
Ammonia (NH <sub>3</sub> )	NH31501	1.0 - 5x10 <sup>-7</sup>	17,000-0.01	56±3	>11	0-50	-	30	Volatle amines
Ammonium (NH <sub>4</sub> <sup>+</sup> )	NH41501/NH41502	1.0 - 5x10 <sup>-6</sup>	18,000-0.1	56± 2	4-10	0-50	-	30	K <sup>+</sup>
Bromide (Br <sup>-</sup> )	BRO1501/BRO1502	1.0 - 5X10 <sup>-6</sup>	79,900-0.40	57±2	2-14	0-80	0-100	20	I <sup>-</sup> , CN <sup>-</sup> , S <sup>2-</sup> ; elevate conc. di Cl <sup>-</sup> , NH <sub>3</sub>
Cadmium (Cd <sup>2+</sup> )	CD21501/CD21502	1x10 <sup>-1</sup> - 1x10 <sup>-7</sup>	11,200-0.01	27±2	2-12	0-80	0-100	20	Ag <sup>+</sup> , Hg <sup>2+</sup> , Cu <sup>2+</sup> , elevate conc. di Pb <sup>2+</sup> , Fe <sup>2+</sup>
Calcium (Ca <sup>2+</sup> )	CAL1501/CAL1502	1.0 - 5x10 <sup>-6</sup>	40,000-0.2	27±2	3-10	0-50	-	30	Pb <sup>2+</sup> , Hg <sup>2+</sup> , Cu <sup>2+</sup> , Ni <sup>2+</sup>
Carbon dioxide (CO <sub>2</sub> ) (Carbonate CO <sub>3</sub> <sup>2-</sup> )	CO21501	1x10 <sup>-2</sup> - 1x10 <sup>-4</sup>	440-4.4	56±3	4.8-5.2	0-50	-	30	Volatle weak acids
Chloride (Cl <sup>-</sup> )	CLO1501/CLO1502	1.0 - 5x10 <sup>-6</sup>	35,500-1.8	56±2	2-12	0-80	-	20	S <sup>2-</sup> , I <sup>-</sup> , CN <sup>-</sup> , Br <sup>-</sup>
Copper (Cu <sup>2+</sup> )	CU01501/CU01502	1x10 <sup>-1</sup> - 1x10 <sup>-8</sup>	6,350-6.4x10 <sup>-4</sup>	27±2	0-12	0-80	0-100	20	Ag <sup>+</sup> , Hg <sup>2+</sup> , elevate conc. di Cl <sup>-</sup> , Br <sup>-</sup> , Fe <sup>2+</sup>
Cyanide (CN <sup>-</sup> )	CNO1501/CNO1502	1X10 <sup>-2</sup> - 5X10 <sup>-6</sup>	260-0.13	57±2	11-13	0-80	0-100	20	S <sup>2-</sup> , I <sup>-</sup> , Br <sup>-</sup> , Cl <sup>-</sup>
Fluoride (F <sup>-</sup> )	FOO1501/FOO1502	Saturated - 1x10 <sup>-6</sup>	Saturated -0;02	57±2	5-8	0-80	0-100	20	OH <sup>-</sup>
Fluoroborate (BF <sub>4</sub> <sup>-</sup> )	BF45101 BF41502	1.0 - 7x10 <sup>-6</sup>	10,800-0.1 (as B)	57±2 56±2	2.5-11	0-50	-	30	Cl O <sub>4</sub> <sup>-</sup> , I, CN <sup>-</sup>
Iodide (I <sup>-</sup> )	IOO1501/IOO1502	1.0 - 5x10 <sup>-8</sup>	127,000-6x10 <sup>-3</sup>	57±2	0-14	0-80	0-100	20	S <sup>2-</sup> , CN <sup>-</sup> , NH <sub>3</sub> , S <sub>2</sub> O <sub>3</sub> <sup>2-</sup> , Cl <sup>-</sup> , Br <sup>-</sup>
Lead (Pb <sup>2+</sup> )	PB21501/PB21502	1x10 <sup>-1</sup> - 1x10 <sup>-6</sup>	20,700-0.2	25±2	3-8	0-80	0-100	20	Ag <sup>+</sup> , Hg <sup>2+</sup> , elevate conc. di Cd <sup>2+</sup> e di Fe <sup>2+</sup>
Lithium (Li <sup>+</sup> )	LIT1501/LIT1502	1.0 - 1x10 <sup>-5</sup>	6,900-0.7	56±2	5-10	0-50	-	30	Na <sup>+</sup> , K <sup>+</sup> , Ca <sup>2+</sup>
Nitrate (NO <sub>3</sub> <sup>-</sup> )	NO31501/NO31502	1.0 - 7x10 <sup>-6</sup>	62,000-0.5	57±2	2.5-11	0-50	-	30	Cl O <sub>4</sub> <sup>-</sup> , I, CN <sup>-</sup> , BF <sub>4</sub> <sup>-</sup>
Nitrogen Oxide (NO <sub>x</sub> )	NOX1501	5x10 <sup>-3</sup> - 5x10 <sup>-6</sup>	220-0.2	56±3	1.1-1.7	0-50	-	30	SO <sub>2</sub> - HF, CH <sub>3</sub> COOH
Perchlorate (Cl O <sub>4</sub> <sup>-</sup> )	PER1501/PER1502	1.0 - 7x10 <sup>-6</sup>	98,000-0.7	56±2	2.5-11	0-50	-	30	No significant interference
Potassium (K <sup>+</sup> )	KOO1501/KOO1502	1.0 - 1x10 <sup>-6</sup>	39,000-0.04	56±2	2-12	0-40	0-50	30	Cs <sup>+</sup> , NH <sub>4</sub> <sup>+</sup>
Silver/Sulfide (Ag <sup>+</sup> /S <sup>2-</sup> )	AGS1501 AGS1502	Ag <sup>+</sup> =1.0 - 1x10 <sup>-7</sup> S <sup>2-</sup> =1.0 - 1x10 <sup>-7</sup>	107,900-0.01 32,100-0.003	57±2 27	2-12	0-80	0-100	20	Hg <sup>2+</sup> , Hg <sup>+</sup>
Sodium (N <sub>a</sub> <sup>+</sup> )	NA71501/NA71502	1.0 - 1x10 <sup>-5</sup>	23,000-0.2	56±2	5-12	0-80	-	20	K <sup>+</sup> , Li <sup>+</sup> , H <sup>+</sup> , Ag <sup>+</sup> , Cs <sup>+</sup>
Surfactant (X <sup>+</sup> , X <sup>-</sup> )	SUR1501/SUR1502	5x10 <sup>-2</sup> , 1x10 <sup>-5</sup>	12,000-1.0	for titration	2-12	0-50	-	30	Similar types of Surfactants
Water Hardness (Ca <sup>2+</sup> /Mg <sup>2+</sup> )	WHA1501/WHA1502	1.0 - 1x10 <sup>-5</sup>	4,000-0.4 (as Ca)	26±3	5-10	0-50	-	20	Cu <sup>2+</sup> , Zn <sup>2+</sup> , Ni <sup>2+</sup> , Fe <sup>2+</sup>

Models 1501 are mono, 1502 are combined glass body, 1503 are combined epoxy body

## In-line holders

**SZ 7101**  
**SZ 7105**  
**SZ 7108**



*Application examples*

### **SZ 7101**

In-line holder

Body: PVC. Sensor Diameter: 12 mm. Sensor Length: 110 mm

Operating Temperature: 40 °C max.

Operating Pressure: 10 bar max. at 20 °C

Fixing: 1/2 " BSP for pipe 1" minimum

Dimensions: L = 110 mm Diameter = 25 mm

**Applications: installation in 1" pipe**

### **SZ 7105**

In-line holder

Body: PVDF. Sensor Diameter: 12 mm. Sensor Length: 110 mm

Operating Temperature: 100 °C max.

Operating Pressure: 10 bar max. at 50 °C

Fixing: 1/2 " BSP for pipe 1" minimum

Dimensions: L = 110 mm Diameter = 25 mm

### **SZ 7108**

In-line holder

Body: 316 S.Steel. Sensor Diameter: 12 mm. Sensor Length: 110 mm

Operating Temperature: 110 °C max.

Operating Pressure: 10 bar max. at 50 °C

Fixing: 1/2 " BSP for pipe 1" minimum

Dimensions: L = 110 mm Diameter = 25 mm

**Applications: installation in 1" pipe**

## Flow cells

**SZ 7231** Flow cell for 1 sensor

**SZ 7233** Flow cell for 3 sensors



**SZ 7251** Autoclean flow cell



## Submersible holders

- SZ810** Immersion probe, L=210 mm PVC
- SZ820** Immersion probe, L=400 mm PVC
- SZ821** Immersion probe, L=400 mm PVDF
- SZ860** Immersion probe, L=720 mm PVC
- SZ880** Immersion probe, L=1170 mm PVC
- SZ8603** Immersion probe, L=720 mm PP
- SZ8803** Immersion probe, L=1170 mm PP
- SZ8608** Immersion probe, L=720 mm AISI 316
- SZ8808** Immersion probe, L=1170 mm AISI 316

**SZ862** Immersion probe, L=720 mm PVC  
low cost type

**SZ882** Immersion probe, L=1170 mm PVC  
low cost type



**SZ 860**    **SZ 862**

## Cables and connectors

- SZ 9211** Coax cable 2.5 mm L = 8 m
- SZ 9215** Coax cable 2.5 mm L = 100 m
- SZ 926** Shielded cable 7x0.25 mm Diameter 6.4 mm
- SZ 927.1** Special extension cable for E.Conductivity cells (5 wires + coax)

**SZ 933** BNC connector

**SZ 935** S7 connector

**SZ 945** S7 connector + 8 m coax cable

**SZ 947** DL connector + 8 m coax cable

**SZ 9471** DL connector + 2 m coax cable with BNC

**SZ 9481** 7-pin connector + 10 m cable

**SZ 9483** 7-pin connector + 30 m cable

**SZ 9490** 4-pin connector

**SZ 9491** 4-pin connector + 10 m cable

## Standard solutions

**SZ 952** Buffer solution 4.01 pH 250 cc.

**SZ 954** Buffer solution 7.00 pH 250 cc.

**SZ 956** Buffer solution 9.21 pH 250 cc.

**SZ 961** ORP standard solution 220 mV 250 cc.

## Filling solutions

**SZ 980** KCl 3M + AgCl solution 1 liter

**SZ 982** KCl 3M + AgCl solution 200 cc.

**SZ 9826** KCl 3M + AgCl solution for high temperature 125 cc.

**SZ 9827** KCl 3M for high temperature 125 cc.

# Portable instruments

## PH 125.2 pH - ORP - °C meter



- High accuracy and reliability
- LCD display
- Temperature visualization
- Automatic or manual temperature compensation
- Corrosion resistant

This instrument is designed for field applications in waste water, swimming pools, chemical, electroplating and food industries.

By pressing any key the instrument will switch on or will extend the operation for about 5 minutes.

The temperature compensation on the pH readout is automatic or manual. The zero and sensitivity adjustment allows a very accurate calibration of the meter.

The plastic case with the polycarbonate membrane provide a corrosion resistance in field applications.

### Accessories and sensors

to be ordered separately

**BC 921:** carrying case

**SZ 959:** buffer solutions 4/7/9 pH 50 cc.

**SZ 142 - SZ 161 - SZ 1031:** suggested pH electrodes

**SZ 251:** suggested ORP electrode

**SP 51501 - SP 51511:** suggested temperature sensors

### Specifications

**Display:** LCD 3 1/2 digit

**Scales:** 0/14.00 pH ±1000 mV -20.0/+120.0 °C

**Zero:** ± 15 %

**Sensitivity:** ± 20 % (pH only)

**Input:** from pH/ORP electrodes, BNC connectors  
from Pt1000, jack connector

**Power:** 9 V battery

**Battery life:** 100 hours operation

**Dimensions:** 92 x 155 x 33 mm

**Weight:** 300 g

## C 125.2 E. Conductivity Temperature meter



- High accuracy and reliability
- LCD display
- Temperature visualization
- Automatic or manual temperature compensation
- Temperature coefficient visualization
- Corrosion resistant

This instrument is designed for field applications in waste water, swimming pools, chemical, electroplating and food industries.

By pressing any key the instrument will switch on or will extend the operation for about 5 minutes.

The temperature compensation on the E.C. readout is automatic or manual. The operator may select the temperature coefficient for the compensation.

The zero and sensitivity adjustment allows a very accurate calibration of the meter.

The plastic case with the polycarbonate membrane provide a corrosion resistance in field applications.

### Accessories and sensors

to be ordered separately

**BC 921:** carrying case

**SZ 3252:** E.C. sensor, K=1 black platinum electrodes

**SP 51501 - SP 51511:** suggested temperature sensors

### Specifications

**Display:** LCD 3 1/2 digit

**Scales:** 0/199.9 µS - 0/1999 µS - 0/19.99 mS - -20.0/+120.0 °C

**Zero:** adjustable

**Sensitivity:** adjustable

**Input:** from 2-electrodes cell, BNC connectors  
from Pt1000, jack connector

**Power:** 9 V battery

**Battery life:** 100 hours operation

**Dimensions:** 92 x 155 x 33 mm

**Weight:** 300 g

# Portable instruments

## OD 125.2 Dissolved Oxygen Temperature meter



- High accuracy and reliability
- LCD display
- Temperature visualization
- Automatic or manual temperature compensation
- Corrosion resistant

This instrument is designed for a reliable D. Oxygen measuring in waste water and in field applications.

By pressing any key the instrument will switch on or will extend the operation for about 5 minutes.

The temperature compensation on the readout is automatic or manual. The zero and sensitivity adjustment allows a very accurate calibration of the meter.

The plastic case with the polycarbonate membrane provide a corrosion resistance in field applications.

### Accessories and sensors

to be ordered separately

**BC 921:** carrying case

**SZ 641.2:** polarographic cell with built-in Pt1000

**SP 51501 - SP 51511:** suggested temperature sensors

## TR 125.2 Temperature meter



- High accuracy and reliability
- LCD display
- Corrosion resistant

This instrument has been designed for general field applications.

By pressing any key the instrument will switch on or will extend the operation for about 5 minutes.

The zero and sensitivity adjustment allows a very accurate calibration of the meter.

The plastic case with the polycarbonate membrane provide a corrosion resistance in field applications.

### Accessories and sensors

to be ordered separately

**BC 921:** carrying case

**SP 510:** suggested Temperature sensors

### Specifications

**Display:** LCD 3 1/2 digit

**Scales:** 0/19.99 PPM 0/100 % air sat. -20.0/+120.0 °C

**Zero:** ± 15 % **Sensitivity:** ± 20 %

**Input:** from polarographic cell, BNC connectors  
from Pt1000, jack connector

**Liquid speed:** 0.3 / 0.7 m/s

**Response time:** 15 s at 95%

**Compensation:** error ±1% f.s. for ±5 °C  
from the calibration temperature

**Power:** 9 Vdc battery

**Battery life:** 100 hours operation

**Dimensions:** 92 x 155 x 33 mm **Weight:** 300 g

### Specifications

**Display:** LCD 3 1/2 digit

**Scales:** -20.0/+120.0 °C - -200/+800 °C

**Input:** from Pt100, jack connector

**Power:** 9 Vdc battery

**Battery life:** 100 hours operation

**Dimensions:** 92 x 155 x 33 mm

**Weight:** 300 g



## CL 125.2

Free Chlorine - Dissolved Ozone meter



This instrument is designed for a reliable Free Chlorine and D. Ozone measuring in swimming pools, drinking water and in field applications.

The PPM measuring is displayed by means of a potentiostatic sensor directly immersed into the water.

The measuring method requires a constant pH value and a stirring of the sensor into the water in order to replace the consumed Chlorine/Ozone by the sensor.

The calibration is performed by a comparison with an external meter (example a photometer).

By pressing any key the instrument will switch on or will extend the operation for about 5 minutes.

The temperature compensation on the readout is automatic or manual. The zero and sensitivity adjustment allows a very accurate calibration of the meter.

The plastic case with the polycarbonate membrane provides a corrosion resistance in field applications.

### Accessories and sensors

to be ordered separately

**BC 921:** carrying case

**SP 651:** potentiostatic sensor with built-in Pt1000

### Specifications

**Display:** LCD 3 1/2 digit

**Input:** from potentiostatic sensor, BNC connectors  
from Pt1000, jack connector

**Scales:** 0/1.999 PPM - 0/19.99 PPM - -20.0/120.0 °C

**Power:** 9 Vdc battery

**Battery life:** 100 hours operation

**Dimensions:** 92 x 155 x 33 mm

**Weight:** 300 g

## SIMULATORS



## BC 125

Electrodes simulator

### Specifications

**Output pH - mV - E.C.:** error 1% max.

**Output mA:** error 2 %

**Input mV:** error 2 % max

**Input mA:** error  $\pm 1$  mV

**Battery life:** 100 hours operation

**Dimensions:** 92 x 155 x 45 mm - **Weight:** 300 g

**Cables:** included

## OD 105.1

Dissolved Oxygen Simulator

This instrument is designed to calibrate the D.Oxygen meters and to check the D.Oxygen polarographic cells.

By selecting the CELL function the instrument provides the polarization voltage to the cell under test and it measures the delivered current.

By selecting the AMP function the instrument measures the polarization voltage and provides an adjustable current to test the input circuits of the D.Oxygen meter.

All data are visualized on the display.

### Specifications

**Display:** LCD 3 1/2 digit

**Polarization Voltage (output):** 0/1000 mV

**Polarization Voltage (input):** 0/1000 mV

**Output Current:** 0/199.9 nA - 0/1999 nA

**Input Current:** 0/199.9 - 0/1999 nA

**Connectors:** BNC

**Power:** 9 Vdc battery

**Battery life:** 100 hours operation

**Dimensions:** 92 x 155 x 45 mm

**Weight:** 300 g

# Gas Analyzers

## B12 Series 2-wire Gas Transmitters



Series B12 transmitters are loop-powered instruments that transmit a 4/20 mA signal linearly proportional to gas concentration.

Operated from a 24 Vdc power supply, the transmitter will drive loads up to 675 ohms, sufficient for most monitoring applications.

Alternatively, the unit can operate at 12 Vdc with reduced output load for applications requiring battery operation.

Transmitters are normally supplied with the sensor close coupled to the enclosure.

However, for special application, the unit can be supplied with separate sensor that can be located up to 25 feet from the transmitter.

The suggested controller is the model BC 7635.

## GS 1222.01 Hydrogen Cyanide transmitter

Complete with HCN sensor

**Scale:** 0/10 PPM

**0012.000088**

HCN spare sensor

## GS 1214.01 Ozone transmitter

Complete with O<sub>3</sub> sensor

**Scale:** 0/1 PPM

**0012.000002**

O<sub>3</sub> spare sensor

## Accessories

**0012.000118:** Calibration adapter

## Specifications

**Gas type:** Customer selected from the sensor list

**Accuracy:** Generally  $\pm 5\%$  of value, but limited by available calibration gas accuracy

**Repeatability:**  $\pm 1\%$  of full scale (electronics)

**Linearity:**  $\pm 0.5\%$  of full scale (electronics)

**Zero drift:** Sensor dependent, but generally less than 2% of full scale per month, non-cumulative

**Span drift:** Application dependent, but generally less than 3% per month

**Output:** Loop powered 4/20 mA, 675 ohm max. at 24 Vdc

**power:** 12/30 Vdc

**Enclosure:** NEMA 4X Polystyrene

**Controls:** Zero and Span internal potentiometers

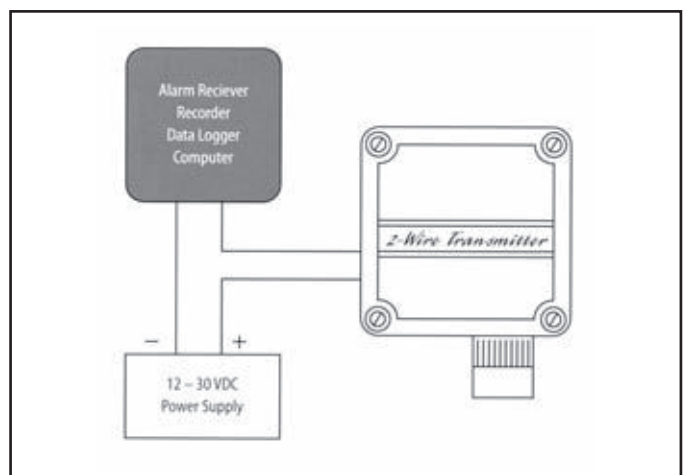
**Operating Temperature:** -30/+55 °C (Oxygen -10/+55 °C)

**Pressure limits:** 0.5/2 bar

**Weight:** 120 g

**Option:** 3 digit LCD display

Gas	Standard Range	Minimum Range	Maximum Range
Ammonia	0/100 PPM	0/100 PPM	0/500 PPM
Carbon Monoxide	0/100 PPM	0/100 PPM	0/500 PPM
Hydrogen	0/4 %	0/2000 PPM	0/10 %
Nitric Oxide	0/100 PPM	0/50 PPM	0/250 PPM
Phosgene	0/2 PPM	0/2 PPM	0/10 PPM
Bromine	0/2 PPM	0/1 PPM	0/5 PPM
Chlorine	0/10 PPM	0/5 PPM	0/50 PPM
Chlorine Dioxide	0/2 PPM	0/1 PPM	0/5 PPM
Fluorine	0/2 PPM	0/1 PPM	0/5 PPM
Iodine	0/2 PPM	0/1 PPM	0/5 PPM
Ozone	0/2 PPM	0/1 PPM	0/5 PPM
Oxygen	0/25 %	0/5 %	0/35 %
Hydrogen Peroxide	0/10 PPM	0/10 PPM	0/50 PPM
Hydrogen Chloride	0/20 PPM	0/10 PPM	0/50 PPM
Hydrogen Cyanide	0/20 PPM	0/10 PPM	0/50 PPM
Hydrogen Fluoride	0/20 PPM	0/10 PPM	0/50 PPM
Hydrogen Sulfide	0/50 PPM	0/25 PPM	0/250 PPM
Nitrogen Dioxide	0/20 PPM	0/10 PPM	0/50 PPM
Sulfur Dioxide	0/20 PPM	0/10 PPM	0/50 PPM
Arsine	0/1000 PPB	0/1000 PPB	0/5000 PPB
Diborane	0/1000 PPB	0/1000 PPB	0/5000 PPB
Germane	0/1000 PPB	0/1000 PPB	0/5000 PPB
Hydrogen Selenide	0/1000 PPB	0/1000 PPB	0/5000 PPB
Phosphine	0/1000 PPB	0/1000 PPB	0/5000 PPB
Silane	0/10 PPM	0/10 PPM	0/50 PPM
Combustible gas	0/100 % LEL	0/50 % LEL	0/100 % LEL



## ELECTROPLATING INDUSTRY INSTRUMENTS

- Total and partial electric charge measuring
- Automatic rectifiers control
- Surface/thickness programming
- Grams measurement of the coating
- Electroplating costs evaluation
- Automatic dosing of brighteners
- Suitable for all the rectifiers



### AH 555.2 Amperhour counter and programmer

This instrument measures the electric charge and memorizes the data in a 6 digit totalizer.

The measuring is visualized and memorized in a separate 4 digit programmable counter.

At the end of the programmed counting, the programmer is zeroed and a 2 digit timer maintains activated an output relay.

The instrument is suitable for every rectifier and it may be used for the automatic rectifier interruption or the automatic feeding of reagents in the electroplating tank.

The dual counter may be independently reset and the timer may be activated manually.

An internal battery allows the data memorization even for a long switched off period.

#### Specifications

**Input:** 0/60 mV  
**Shunt value:** 1/99  
**Output:** isolated pulses  
**Timer:** 0/99 s  
**Relay contacts:** 5 A 220 Vac SPDT  
**Power:** 110/220 Vac 2 VA  
**Isolation:** 4000 V (IEC 348)  
**Terminal blocks:** extractable  
**Dimensions:** 241 x 89 x 164 mm  
**Weight:** 1.02 Kg

### AH 565.2 Surface and Thickness programmer

This instrument carries out the measurement of the electric charge then memorized in a 6 digit counter.

The measurement is converted, according to the Electrochemical Equivalent and the efficiency of the specific process, to a figure corresponding to the result of surface x thickness.

The user may program the surface in dm<sup>2</sup> and the thickness in mm on the front panel 3 digit selectors, in order to activate the relay of the instrument when the counting result is corresponding to the programmed SxT.

The relay remains activated for the time programmed on the front panel time 2 digit selector or it can be deactivated by an external contact. The operator may use the relay contacts to provide an automatic interruption of the rectifier.

The reset of counters may be done manually. The instrument is adaptable to any rectifier from 1 to 9900 A.

An internal battery allows to maintain the data for long time even if the meter is switched off.

#### Specifications

**Input:** 0/60 mV  
**Shunt value:** 1/99  
**Output:** isolated pulses  
**Timer:** 0/99 seconds  
**Power:** 110/220 Vac 2 VA  
**Terminal blocks:** extractable  
**Dimensions:** 241 x 89 x 164 mm  
**Weight:** 1 Kg

### AH 535.2 4-channel adder

This instrument receives the pulses from up to 4 amperhour counters and furnishes the total counting to the 6 digit display and to the internal memory.

It is provided with a dual 6 digit counter, a 4 digit programmer and a 2 digit timer, for the activation of the output relay.

The counters and the programmer may be reset manually.

#### Specifications

**Input:** from 4 Ah counters  
**Timer:** 0/99 s  
**Relay contacts:** SPDT 220 V 5 A  
**Isolation:** 4 kV (IEC 348)  
**Power:** 110/220 Vac 2 VA  
**Terminal blocks:** extractable  
**Dimensions:** 241 x 89 x 164 mm  
**Weight:** 1.02 Kg

# Electroplating

## AH 515.2

Amperehour counter



This instrument measures the electric charge delivered by a rectifier in the electroplating application.

It is provided with a dual 6 digit counter.  
Each counter may be reset manually.

The instrument is suitable for any rectifier from 1 to 9900 A.  
An internal selector allows the instrument to measure the electric charge in ampereminute.

### Specifications

**Input:** 0/60 mV

**Scales:** in Ah and Amin

**Shunt value:** 1/99

**Output:** isolated pulses

**Isolation:** 4 kV (IEC 348)

**Power:** 110/220 Vac 2 VA

**Terminal blocks:** extractable

**Dimensions:** 241 x 89 x 164 mm

**Weight:** 1 Kg

### Options

**091.403** Power at 24 Vac for amperehour meter.

## AH 275.2

Amperehour meter/programmer  
with automatic doser



*Front and back side of the instrument*

This instrument includes the electronic circuits for Amperehour counting and programming, and a bellows pump for an accurate feeding of chemical additives in the electroplating process.

It is provided with a dual 6 digit counter, a 4 digit programmer and a 2 digit timer.

It maintains the same specifications of the electronic part of the model AH 555.2.

### Spares

#### D 920

Fittings for pump of AH 275.2 and D 611

#### D 932

Kit OR and valves for bellows pumps

### Specifications

**Input:** 0/60 mV

**Flow:** 1/99 cc. (50 cc. factory adjustment)

**Suction:** 0.27 bar (4 PSI)

**Discharge:** 0.27 bar (4 PSI)

**Power:** 220 Vac 70 VA max.

**Dimensions:** 220 x 95 x 170 mm

**Weight:** 4.1 Kg





---

**B&C Electronics Srl**

Via per Villanova 3  
20040 Camate  
Milano Italy  
Phone (+39) 039 631721  
Fax (+39) 039 607 6099  
Email [bc@bc-electronics.it](mailto:bc@bc-electronics.it)

[www.bc-electronics.it](http://www.bc-electronics.it)